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EDITED BY

DR. FREDERICK HOFFMANN and DR. EDWARD KREMERS.

WITH THE CO-OPERATION OF

Prof. CHAS. CASPARI JR., Professor of Pharmacy, Maryland College of Pharmacy.

Prof. VIRGIL COBLENTZ, Professor of Chemistry and Physics, New York College of Pharmacy.

Mr. R. FISCHER, Instructor in Practical Pharmacy, University of Wisconsin.

Prof. H. KRAEMER, Ph. D., Professor of Botany and Pharmacognosy, Philadelphia College of Pharmacy.

Prof. J. U. LLOYD, Professor of Chemistry, Cincinnati Eclectic Medical Institute, and Pharmaceutical Manufacturer.

Dr. CHAS. MOHR, Mobile, Ala., Special Agent Forestry Division, U. S. Dep't. of Agriculture.

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Prof. WM. SIMON, Ph. D., Professor of Chemistry, Maryland College of Pharmacy, and Baltimore College of Physicians and Surgeons.

Prof. A. B. STEVENC, Professor of Pharmacy, University of Michigan.

Dr. R. H. TRUE, Botanical Museum, Harvard University, Cambridge, Mass.

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The New Year.

To its patrons and readers the Pharmaceutical Review extends greetings coupled with the best wishes for the new year upon which we have just entered. To his colaborers the managing editor desires to give special thanks for their generous contributions to pharmaceutical science made through the columns of the Review. American pharmacy has probably never witnessed such unselfish cooperation of the foremost and best representatives of various sections of the country united to advance our calling through pharmaceutical journalism. Indeed the problem has not been so much how to add to the editorial staff as at times how to find space for their contributions in the way of original articles and abstracts. The publication of almost fifty percent more text during the past year in the form of the Pharmaceutical Archives has supplied an outlet for the longer and more technical articles, thus enabling the Review to give more space to a large variety of subjects in the form of abstracts. The work of these supplementary journals, though by no means perfect, has been highly commended. Let us hope that the readers of the Review will add to their praise a more substantial proof of their appreciation by securing new friends. *E. K.*

Retrospect.

The future writer of the pharmaceutical history of the past quarter of this century will naturally halt to discuss the commercial decline

of the American drug store after pharmacy laws had been enacted in most states of the Union during the seventies and eighties. Judging from the events of the past year, it would seem that the retail druggist is the last to recover from the general depression in business through which we as a nation have passed.

Though the Review is not a trade-journal, but appeals rather to the scientific and professional tendencies of the pharmacist, it would be irrational to pay no attention whatever to the present depressed financial condition of the pharmacist, for a good financial return is of necessity the foundation of scientific pharmacy. A good income is not only necessary to the pharmacist himself, but it is in the interest of the public whom he serves. We cannot expect to have competent pharmacists unless the returns are a fair equivalent for services rendered, for the better class of young men and women will seek other callings if time and money spent in their proper education do not secure reasonable returns.

That fair returns are in the interest of the public as well as of the apothecary is not generally appreciated, yet it is an old, old story. "My poverty, but not my will, consents" is the argument—seldom openly confessed, it is true—which so often leads the druggist to do what he ought not to tolerate for a moment. He may degrade himself morally by buying cheap, worthless drugs or by substituting one preparation for another, but it is the sick public that suffers most from such a state of affairs.

During the past year an attempt has been made to improve the commercial condition of the druggist by organization. This experiment has failed before, but this is no reason why it should not be tried again if we have learned by previous failure. But have we? Apparently not very much. Failure has resulted before and will result again so long as we spend our best energies trying to swim against an overpowerful stream. Instead of wasting our time and money in useless attempts we should rather sound the channels and study the currents and adjust our course accordingly.

The commercial degeneracy of the American drug store has been attributed to a number of causes, prominently among which have figured the following:

1) The establishment of the department store with its drug and prescription department.

2) The cutting of prices on so-called patent medicines by the department store and by the druggist himself.

3) The preparation of galenicals etc. by the large manufacturers.

4) The dispensing of medicines by the physician.

5) Our defective patent law.

To these has recently been added

6) The war tax, which seems to have fallen heavier on the retail druggist than on any other class of people.

The department store has affected almost every other line of business as well as the drug store. In fact, the prescription department was one of the last to be added to the department store. Moreover, the department store manager must employ a registered pharmacist to attend to this department. He must live up to the law in this and other respects fully as much as the drug store proprietor. In fact, a more watchful eye is kept on him than on many an erring druggist who violates the law by having his store in charge of an incompetent and unregistered assistant.

If the department store is making inroads upon all lines of business and even the professions, it is because it meets the demands of the public in a certain measure better than most individual stores. Those who to-day rail against the department store are in about the same position in which the angry stage coach driver was when the railroad deprived him of his business. We should scorn the idea of going back to stage coach and canal boats, and yet to-day there is much railing against the department stores, and money is spent to pass unconstitutional and absurd laws against them. It seems strange, but it is true, that most laws directed against the department store would, if enforced, have annihilated most drug stores, for most drug stores are department stores on a small scale. If any one doubts this, the writer can supply all necessary information in the way of proof from druggists' letter heads.

Cooperation will here have to be the remedy of the small man. Combine, make yourself powerful by the concentration of capital and meet the large store with its own weapons.

Of the complaint about the **cutting of prices** there has been no end. Our local, state and national conventions have discussed this question *ad absurdum*. Special associations have been formed to prevent cutting and they have speedily gone the way of all things

human. Yet the cutter, like the poor man, is still with us and always will be.

At the Minnetonka meeting of the American Pharmaceutical Association most of the time of the commercial section was devoted to this subject. And yet the retail druggists represented in that section elected the "arch cutter" as their chairman. After they realized what they had done, they were for a moment dumbfounded at their own action. Then we were told that remarkable things were going to happen. This prophecy became true, for at Baltimore this "arch cutter" was lionized by the ones who had formerly denounced his methods of business. Strange to say, the conversion lasted but a short time. A few months later at St. Louis some of the same men who were either at Minnetonka or Baltimore or both places assisted in passing the following definition of a "legitimate retail druggist":

"We understand the legitimate retail druggist to be one who sells to the consumer direct at the full retail prices established by the manufacturer." This definition became necessary because "we" the N. A. R. D. "demand wholesale druggists to confine their sales to the legitimate retail drug trade." How many retail druggists assembled at St. Louis can honestly claim to be "legitimate" representatives of their calling according to their own definition. Possibly not ten percent.

The only remedy against the evil of price cutting is well known and has been effectively applied. It does not call for much machinery like the plans proposed, which on account of the complexity and expense of the machinery will never work effectively.

To cut out the cutter is to cut below his figure. Local, not national organization can accomplish this and has accomplished it wherever the druggists of a community have been sincere in their intentions. Ten or fifty druggists with an honesty of purpose can soon kill the cutter by turning upon him his own weapon with overwhelming power.*

It seems a pity, however, to lose so much time and energy over quack remedies. The very men who have had most to complain about price cutting of patent medicines have elected as the first

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* Since these lines were written, Mr. Jacobs, Chairman of the Commercial Section of the A. Ph. A., has spoken a plain word with regard to trusts of this kind. See Supplement of this number. The above paragraph does not represent the writer's convictions, but points to the only feasable and tried scheme if the policy, for which so many druggists stand at association meetings, is to be followed.

president of their new association a man who has solved the problem by throwing all nostrums out of his pharmacy. Why not fight for a future that will enable all druggists to follow his most excellent example.

The preparation of galenicals by manufacturers is a deviation from old fashioned pharmacy to which the American druggist has become so accustomed that little is now said of it. This subject has practically been lost sight of during the present year on account of the war tax. Attempts at cooperative manufacturing are still in an experimental stage and do not receive too much attention from those most vitally interested in the experiment. The advantages and disadvantages of manufacturing for rather than by the dispenser have so often been discussed in the pages of this journal that it is useless to review the situation at the present time.

The preparation of ready medicines by the large manufacturers has made it very easy for the **physician to dispense his own medicines.** It would be much better for the public if the physician did not attempt to perform work for which he has been neither educated nor trained, yet there are several reasons that partly excuse him. The education and training of the average druggist does not fit him any more to distinguish between poor and good medicines than the training of the better class of physicians. This supposition is not only true on *a priori* grounds, but it can be proven by adulterated and vile preparations found in drug stores. The physician, by using the remedies of one manufacturer, is likely to get the same thing no matter how good or poor; by sending his prescriptions to the drug store, he will get one thing in one place, and quite a different article in another. This is not a hypothesis, but bare truth based on actual observation.

The Behring patent has brought out the question of **patent reform** in good earnest. Little or nothing new can be said on this subject. Here also the druggist has heretofore preferred to fight the law rather than to secure its reform. The manufacturers of patented chemicals are sufficiently alert to prevent any extreme legislation that might be demanded by the medical fraternity, which denounces patenting in its code of ethics, but is free to prescribe patented remedies and copyright its own books.

The **war tax** which has so thoroughly stirred up the druggists all over the country is unquestionably unjust to the druggist. How-

ever, if the druggists had stood by the Committee on National Legislation of the American Pharmaceutical Association half a year ago instead of staying away from the meeting of the American Pharmaceutical Association and finding fault with it for not "doing something" for them, the unjust law under which they are now suffering might never have been enacted (see vol. 16, p. 406). The secret nostrum manufacturers were more alert and forced the druggists to shoulder the brunt of the burden that was intended for them.

This review of the past year's turbulances has not been written in any pessimistic vein. It is rather because the writer always has been an optimist in pharmaceutical matters that he possibly feels the shortcomings of our calling more than others who have settled down to a gloomy view of things. Neither does he find fault with the National Association of Retail Druggists because of its organization. We hope sincerely that it may be more successful than earlier attempts, but if it is to be successful at all, it must learn from the failures of these earlier attempts. If it apparently does not learn, its attention should most emphatically be called to its blindness. The true friend of the retail druggist is not he who flatters him.

The only true remedy for the evils of pharmacy is a **higher educational standard.** Much pruning and cutting will have to be done. Neither will a handsome fruit bearing tree develop in a year. Demand of your state boards that they be more stringent in their requirements, and place men on the boards who are not afraid to court a little ill-will if necessary.

We are glad to see that the N. A. R. D. has passed the following resolution: "Resolved, That the delegates of this convention be urged to promote uniformity of standards among State Boards of Pharmacy, to the end that higher qualifications shall be required of those desiring to become registered as pharmacists."

Hand in hand with this demand for a higher educational standard, **more thorough local organization** should be effected. What can e. g. the 1800 registered druggists of a state accomplish if the state association has a membership of but 300 and if not more than two or three out of every hundred attend the annual meeting which is the only meeting. Such meetings become a farce. Don't constantly look to others to do something for you, but rely on the old adage that God helps those who help themselves. *E. K.*

Coumarin and Vanillin, their Separation, Estimation and Identification in Commercial Flavoring Extracts.

By *William H. Hess* and *Albert B. Prescott.*

It is a common practice in preparing an extract of vanilla from vanilla beans to introduce also, as a lower-priced material, a portion of tonka beans. This makes a cheaper article and one that is generally popular with consumers. It is understood, however, to be an inferior article when compared with the genuine, and it can no longer be correctly labeled "Vanilla Extract". Under this name the presence of tonka extract constitutes an adulteration and, hence, the separation, identification and estimation of coumarin, the odoriferous principle of the tonka bean, has become a practical problem for the analytical chemist.

Theory for the Separation of Coumarin from Vanillin.—Vanillin is hydroxymethoxybenzoic aldehyde, while coumarin is the anhydride of coumaric (orthohydroxycinnamic) acid. The separation depends on the aldehydic character of vanillin. If vanillin be dissolved in pure dry ether and dry ammonia gas passed through the solution, the aldehyde ammonia compound of vanillin will be precipitated in almost quantitative proportions. It is accordingly not very soluble in ether; but like all aldehyde ammonias it is very soluble in water. Ammonia water should, then, extract all the vanillin from an ether solution. This theoretic principle is fully borne out in practice, as has been proved by repeated experiment. Coumarin on the other hand remains wholly in the ether solution.

Method of Analysis.—A sample of 25 to 100 grams of the commercial extract to be examined is placed in an evaporating dish, and the alcohol is allowed to evaporate at about 80° C. Water is added from time to time to keep the amount of liquid about equal to the original volume. When the alcohol is all gone, lead acetate solution is added drop by drop until no more precipitate forms. Stirring with a glass rod aids in the flocculation and settling of the precipitate. The solution is now filtered, best through an asbestos funnel under pressure, and the precipitate washed with a few cubic centimeters of hot water. The cooled filtrate is now extracted with

ether* by shaking out in a separatory funnel. About 15 to 20 cc. of ether are used each time, and the process of shaking out is repeated until a few drops of the ether evaporated on a watch glass leave no residue. If the shaking is done thoroughly, three to four times shaking out will usually be sufficient to extract all the vanillin and coumarin. The combined ether extracts are introduced into a second separatory funnel and shaken out with dilute ammonia (one part strong water of ammonia to two parts of distilled water), using about 2 cc. of the alkaline water solution at a time, and repeating the process until the ammoniacal solution is no longer colored yellow. The ether solution is washed with 2 cc. of water and this wash water added to the alkaline extract. The ammoniacal solution is set aside for the estimation of vanillin. The ether solution is now poured out into an evaporating dish, and the ether allowed to evaporate spontaneously, or better, the dish containing the ether is placed in a vacuum desiccator over sulphuric acid, when the ether may be removed quickly. To prevent bumping of the ether and consequent loss during distillation in vacuo, a capillary tube sealed at one end is so placed in the liquid that the open end projects into the centre of the solution, while the sealed end extends well out of the liquid and rests on the side of the dish. It is necessary that the tube be long enough to prevent its resting horizontally on the bottom of the dish.†

For Coumarin.—The residue having been left in vacuo over sulphuric acid long enough to remove all water, or else dried in an air bath at not above 45° C., is treated with a few cc. of cold ligroin,‡ the latter being poured off into a clean dry weighed dish. The extraction with ligroin is repeated until a drop evaporated on a watch glass leaves no residue. The ligroin is allowed to evaporate —best in vacuo in a desiccator containing paraffin—is dried at not above 45° C. and weighed. This gives pure crystalline coumarin, melting at 67° C. After weighing, a melting point determination should be taken, and this with the odor—which is characteristic at this point in the analysis when compared with that of a known sample—is sufficient for its identification.

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* Chloroform may be used instead of ether here, and throughout the process, with this advantage, that the evaporation of chloroform leaves the residue dryer than it is when ether is used.

† Tiny capillary tubes are very useful in preventing bumping in boiling liquids and are made by drawing out a glass tube to the dimensions of a hair. Cut the tube into a convenient length and fuse up one end.

‡ A petroleum fraction boiling between 30° and 40° C.

For Vanillin. — The ammoniacal solution obtained above is rendered slightly acid with 10 p. c. hydrochloric acid. It is then shaken out with ether in manner as stated before. The ether is removed and the residue is dried in vacuo over sulphuric acid or else in an air bath at not above 55° C. This residue is washed repeatedly with boiling ligroin, using a few cc. at a time to remove the vanillin and free it from adhering substances. The ligroin solution is decanted into a weighed dish, the ligroin is removed, the vanillin is dried at not above 55° C. and weighed. This gives a pure crystalline product melting at 80°—81° C. After the weighing, a melting point determination should be made, and then color tests may be applied. Some samples of vanilla extracts have been found to contain phenol-like bodies resembling creosol in odor and chemical behavior. These give color compounds with salts of iron, hence, any volumetric estimation, or even qualitative test, applied to the unpurified extract may be fallacious when based on color reactions of iron salts.

Results were obtained by this method under control as follows. From Mexican vanilla beans a liquid product was made by following the directions of the United States Pharmacopœia for Tincture of Vanilla. Of this tincture, 25 grams were taken in duplicate portions, to each was added 0.5 gram of pure crystallized coumarin, and the analysis was made for estimation of coumarin and of vanillin. The coumarin recovered from the duplicate portions was, respectively, 0.491 gram or 98.2 p. c. of that taken, and 0.482 gram or 96.4 p. c. of that taken. The vanillin recovered was, respectively, 0.3081 gram, and 0.2997 gram, from each of the portions of twenty-five grams of the tincture.

This method for vanillin is much easier and quicker to work than the sodium bisulphite method, and has these advantages: 1) the shaking out with ammonia water is quickly done; 2) the alkaline solution of vanillin thus obtained is small in bulk; 3) the trouble of getting rid of sulphur dioxide is avoided. The separation of the vanillin is also more complete.

University of Michigan, November 18, 1898.

Note on the Inversion of Cane Sugar in Official Syrups.

By *Louis Kahlenberg.*

F. W. Haussman in the Amer. Jour. of Pharm. for Dec. 1898 contributes an article on this subject which is of interest to every pharmacist and medical practitioner. The author investigates the inversion of the cane sugar contained in a number of official syrups. The latter are considered under three heads, viz.: 1. Syrups with free mineral acids.—Syrups of a) hydriodic acid, b) calcium lactophosphate, c) phosphate of iron, quinine and strychnine, and d) hypophosphites. 2. Syrups with free organic acids.—Those of a) citric acid, b) squill, c) ipecacuanha, d) acacia. 3. Non-acid syrups.—Those of a) althaea, b) lactucarium, d) orange peel, e) tolu.

The method employed was to test the syrup with Fehling's solution immediately after preparation and again after various periods of time. The experiment was generally continued for several months. The work was begun in spring and continued through the summer. In a few cases syrups that were from twelve to thirty months old were tested.

In the case of hydriodic acid the inversion progressed very rapidly, being practically complete in a few days. The author attributes the brown color so often developed by this preparation on standing to decomposition products of laevulose rather than to the presence of free iodine. He finds no free iodine even in samples that have turned brown. Syrup of calcium lactophosphate showed less rapid inversion. The inversion had advanced far after eight months. This syrup also turned brown. The author explains this as in the previous case. Official syrup of hypophosphites remained colorless even for eighteen months. The inversion, however, was practically complete, as the figures obtained show. A sample of Churchill's syrup that was six months old contained practically no inverted sugar. The sugar in syrup of citric acid was inverted rather rapidly. About two-thirds of the inversion was accomplished in three months. The inversion was complete after ten or eleven months. Syrup of squill showed that after seven months not quite half the sugar was inverted. In syrup of ipecacuanha the inversion was very slight, only 3.7 p. c. of invert sugar (calculated as glucose) being found in any sample.

Syrup of acacia was found to reduce Fehling's solution. It is questionable, however, whether this reduction was caused by the gum present or by invert sugar; the former appears the more probable. The non-acid syrups either did not reduce Fehling's solution at all, or yielded reductions corresponding to less than one percent of glucose.

The general results are about such as could have been foretold. The inversion progresses most rapidly in those syrups that contain strong mineral acids. Where organic acids only are present, the inversion is less rapid, and finally in neutral or alkaline syrups the inversion is practically nil. This is in perfect harmony with the classical researches of Wilhelm, Ostwald and others. (Compare Ostwald, Grundriss der allgemeinen Chemie, p. 358; Nernst, Theoretische Chemie, pp. 431—435.)

The speed of the inversion of sugar is proportional to the concentration of the hydrogen ions present in the solution and is greatly accelerated by raising the temperature. Since strong mineral acids are more dissociated than organic acids, their solutions contain more hydrogen ions and consequently invert faster. Sugar inversion has been so thoroughly studied, that it would not be difficult to so conduct the experiments as to enable one to estimate the content of hydrogen ions of these various syrups or in other words their acidity.

The author states the fact that organic acids have the power to invert sugar as though it were something new and refers to the work of Kulisch (A. Ph. A. 1893) as indicating that heat and the amount of free acid are important factors in the course of inversion. These facts have long been known. The inverting power of many different acids, both organic and inorganic, has been studied at different temperatures and in different concentrations; indeed, sugar inversion is regarded as a standard method for determining the concentration of hydrogen ions in solutions.

The experiment might have been greatly simplified by using a polariscope whenever the solutions were clear or only slightly colored. Short tubes could have been employed in testing such strong solutions, and so even somewhat colored solutions could have been investigated. The effect of temperature on the speed of inversion might have been demonstrated far more strikingly by heating one of the syrups to a higher temperature for several hours instead of noting simply the relatively slight increase of speed due to the warm weather in summer.

In view of the fact that the digestive secretions themselves change starch to fermentable sugar, that many of our foods contain such sugar, and that invert sugar is consumed in preserves, lemonade, etc., it would appear that the author's fears that the invert sugar in official syrups will cause gastric disturbances need hardly to be entertained.

Scale Extracts.

By *A. B. Lyons*, M. D.

The Art of Pharmacy had its birth when primeval man first conceived the idea of preparing a medicine from some herb or bark by steeping it in water, possibly before he had learned how to boil the water. From the infusion to the decoction was a step obvious as soon as the use of fire was known. But infusions and decoctions soon spoil, and when men began to provide themselves with medicines to be kept in store, they were prepared for the next step, which consisted simply in evaporating the infusion or decoction to dryness, and so obtaining a concentrated representative of the crude drug superior to the latter, generally, in keeping qualities. In later times better solvents took the place, often, of water, and various improvements have been introduced in the process of concentration, but the galenical extract has maintained its place in the pharmacopœias of the world with no essential change in its character.

Progressive America, however, has not been satisfied with a product so essentially crude as the ordinary solid extract. Uncleanly to handle, difficult to weigh accurately, unmanageable in dispensing, with no fixed standard of strength—liable indeed to great variation in strength from loss or absorption of hygroscopic moisture—they have been open certainly to improvement. For some years, manufacturers have supplied extracts in powdered form, which are certainly more convenient for dispensing and more easily protected from the influence of atmospheric variations. From some drugs, such as nux vomica, a powdered extract can be easily made by simply carrying the evaporation of the product to complete dryness. In the case of most drugs, however, complete exsiccation of the extract requires prolonged application of heat and the residue when dry is often very hygros-

copic, or is too soft to be reduced to a powder. Manufacturers have overcome the difficulty by adding inert powders, amounting sometimes to twenty-five percent of the weight of the product. Calcined magnesia has been recommended and largely employed for this use, but it accomplishes its purpose by producing chemical changes that may seriously impair the activity of the product.

Perhaps the least objectionable addition is that of a portion of finely powdered drug, which is a much better absorbent than sugar of milk. If the proportion exceeds ten percent of the powdered extract, however, the product can hardly be called an "extract" of the drug.

Most of the powdered extracts in the market are so hygroscopic that even when kept in well corked bottles they cake together more or less in summer, and very frequently coalesce into a solid lump so that they are not more easily dispensed than the ordinary solid extracts.

In view of these facts, the writer, about a year ago, conceived the idea of giving to vegetable extracts the scale form, thus making it possible to dry them thoroughly, either without heat or by aid of a current of slightly warmed air. It was found practicable in most cases to prepare thus an extract four times the strength of the crude drug, and it seemed best to adopt this uniform standard of strength, except for extracts which have been heretofore made of a definite alkaloidal strength. The end in view is secured by preparing a highly concentrated extract of the drug by the use of menstrua which leave behind as much as possible inert constituents, and then add sufficient acacia to bring the product to a definite standard of strength. The thin extract is spread on glass plates and dried in an air current as is usual in making scale preparations.

The advantages of scale extracts, which are already competing in the market with the equally unofficial powdered extracts are these:

1. They are not subjected to any prolonged or excessive heating in the process of manufacture, and therefore are more likely than the powdered extracts to retain unimpaired the full efficiency of the drug they represent.

2. They are much less hygroscopic than the corresponding powdered extracts, so that under reasonable care they can be kept indefinitely without caking together. In case they should cake, it is a very easy matter to restore them to their original condition.

They may be dissolved in a little warm water, spread on glass and scaled again, with very little trouble.

3. They are attractive in appearance, containing comparatively little of the inert matter which renders the ordinary solid extract so unsightly.

4. They are definite in strength, corresponding as nearly as possible with the best standards for ordinary extracts. Where there is no standard, these preparations are made uniformly four times the strength of the crude drug.

5. The ordinary solid extract may segregate into portions differing materially in strength (this has been shown to occur in extract of belladonna), and variations in strength from evaporation or absorption of moisture defeat the attempt to bring them to a fixed standard. The scale extracts are of necessity homogeneous and not liable to any material change from gain or loss of moisture.

6. The scale extract serves even better than the ordinary solid extract as an excipient for pill masses, requiring only addition of a very little water, or sometimes preferably of glucose or syrup, to form a plastic pill mass.

[Laboratory of Nelson, Baker & Co.]

MONTHLY REVIEW.

Chemistry.

Estimation of Morphine in Opium.—Karl Dieterich compares the method of Montemartini and Trasciatti with the Dieterich method upon several samples of opium and comes to the positive conclusion that the former method is absolutely worthless. He agrees in every particular with Thoms, who reported upon his experiments with the same method in a previous number of the same journal.

Dieterich sums up his conclusions on the M. & T. method as follows: The results are widely discordant even with the same sample. The yield is generally much too high. While only 0.15—0.22 p. c. of ash was found in the morphine by the authors, Dieterich obtained 1.269 p. c. The resulting alkaloid is brown instead of light yellow as claimed. The method is tedious, inaccurate and expensive.

[Ber. d. deutsch. pharm. Gesellsch. 8, pp. 171—173.] *J. O. S.*

Indicators. — By John Waddell. J. Phys. Chem., 2, 171–184. — The author shows that the addition of ether, benzene, or chloroform, and in some, but not in all cases, also of alcohol or acetone, to aqueous or alcoholic solutions in which the indicators fluorescein, phenacetolin, phenolphthalein, paranitrophenol, cyanine, methyl orange, turmeric, lacmoid, and corallin are present in the form of their salts causes a change in color to that of the free acid or base. This change of color takes place much more readily when the indicator is present in the form of its acetate than when in that of its hydrochloride, and when in the form of its ammonium salt than when in that of its potassium salt. The author apparently considers that the change of color is most probably explained by the assumption that the electrolytic dissociation of the salt to whose ion the color is due is greatly reduced by the organic solvents; but at the close of the article he raises two objections to this hypothesis; namely, first, that it is then necessary to assume that the undissociated indicator salt and acid or base of the indicator have just the same color in all the cases investigated; and, second, that the hypothesis does not offer any explanation of the fact that the salts of weak acids (acetic) or bases (ammonia) undergo the change so much more readily than those of strong acids and bases (like hydrochloric acid and potash). These objections seem to the reviewer to warrant completely the rejection of the above explanation; and it appears to him that the following one, which is in part suggested by the author himself, is far more probable: the very weak acids and bases of which indicators consist, are so much less dissociated in organic solvents than in water, that their salts become nearly completely hydrolyzed when these solvents are added to the aqueous solutions of the salts, in spite of the fact that the concentration of the ions of the water is also reduced somewhat; hence the addition of the solvents liberates the free indicator acid or base, which exhibits its usual color, and it will, of course, liberate it much more readily if the other component of the salt is also a weak base or acid. — By noting whether the change of color occurred on adding the solvents to the acid solution, or to the alkaline solution of the indicator, or to both solutions, the author was able to determine whether it acts as a base or as an acid, or as both. He concludes from his experiments that phenolphthalein, paranitrophenol, and turmeric are acids; that cyanine, methyl orange and lacmoid are bases; and that fluorescein, phenacetolin and corallin act both as acids and bases.

[T. Q.'s Rev. of Am. Chem. Research, 1898, p. 95.] *E. K.*

Notes on Taka-diastase. — W. E. Stone and H. E. Wright have compared the action of malt-diastase and taka-diastase upon starch. Malt-diastase was prepared by digesting fresh pale malt with water at room temperature during three or four hours, filtering and adding to the clear filtrate two volumes of alcohol. The flocculent precipitate was collected,

pressed dry, and finally dried over sulphuric acid. The taka-diastase used was the patented preparation in the market. The digestions with malt-diastase were carried on at 60° C., those with taka-diastase at 40° C. The investigation covered:

1. Comparative action of the two kinds of diastase on potato starch as indicated by the iodine test. It was in every case apparent that the effect of taka-diastase was more rapid at the outset, as was indicated by the almost immediate change from the typical blue of the starch iodine compound to reddish and violet tints. It was generally noticeable also that the taka-diastase liquified the starch paste very rapidly, more so than the malt-diastase. On the other hand, the complete conversion of the starch into forms which no longer gave color reactions with iodine was effected much earlier by the malt-diastase, while the taka-diastase scarcely attained this result after several hours.

2. Comparative action of the two kinds of diastase on potato starch as shown by optical tests. The products of the action of taka-diastase were in all cases of lower specific rotation than those from malt-diastase, thus indicating a more rapid change to maltose.

3. Comparative action of the two kinds of diastase on potato starch as indicated by the amount of sugar formed. The results showed that for a given short time the actual saccharifying power of taka-diastase is decidedly superior to the malt-diastase.

4. The use of taka-diastase as an analytical reagent for the determination of starch. While no trouble was experienced in removing all starch from finely ground wheat, maize and potato by means of fresh malt-infusion, this could not be accomplished with taka-diastase.

[J. Am. Chem. Soc. 20, p. 639.] *W. A. P.*

Botany and Pharmacognosy.

Edible and Poisonous Fungi. — A few simple rules by which edible and poisonous fungi may be distinguished, were prepared for the Department of Agriculture by Dr. W. G. Farlow. They are reprinted here for the benefit of any who may desire to make use of them:

1. Avoid fungi when in the button or unexpanded stage; also those in which the flesh has begun to decay, even if only slightly.

2. Avoid all fungi which have a stalk with a swollen base surrounded by a sac-like envelope, especially if the gills are white.

3. Avoid fungi having a milky juice, unless the milk is reddish.

4. Avoid fungi in which the cap or pileus is thin in proportion to the gills, and in which the gills are nearly all of equal length, especially if the pileus is bright colored.

5. Avoid all tube-bearing fungi in which the flesh changes color when

cut or broken, or where the mouths of the tubes are reddish, and in the case of other tube-bearing forms experiment with caution.

6. Fungi which have a sort of spider web or flocculent ring around the upper part of the stalk, should in general be avoided.

[Bot. Gazette, 26, p. 221; from Bull. Dept. Agr.] *L. S. Cheney.*

Mustard Cultivated in Bengal.— H. H. Rusby briefly abstracted a paper by D. Praire, who undertook originally to determine the species of *Brassica* cultivated in the different parts of Bengal by reference to their native names. It was soon found that the names had been in many instances transferred, rendering the records concerning them entirely untrustworthy. The author was thus obliged to abandon his original plan. He obtained seed from as many districts as possible for planting, and from these a large number of lots were grown, the plants being carefully studied and compared in all stages of their growth. In this investigation the genera *Sinapis* and *Brassica* are thrown together. Priority of use is maintained as fixing both the common and botanical names. Places of publication are cited. Little attempt was made to discriminate between nature's species and those which have resulted from cultivation, provided specific characters are clear. One important fact established is that there is no tendency to intergrading between the species. Neither the white mustard nor the black mustard as we know them are grown in Bengal. The species as worked by Praire are *Brassica rugosa* (Roxb.), Praire; *B. rugosa cuneafolia* (Roxb.), Praire; *B. juncea* (L.), Hook. f. & Thoms.; *B. campestris*, L.; *B. campestris*, Sarson Praire; *B. Wapus dichotoma* (Roxb.), Praire: *B. Wapus esculenta*, D. C.; *B. Chinensis*, L.

[Journ. of Pharmacol., 5, p. 219; from Agr. Ledger.] *L. S. Cheney.*

Arrow Poisons of the Peninsula of Malacca.—In those parts of Southern Asia where the natives make use of poisoned arrows, two regions are to be distinguished according to Dr. Hartwich in a paper before the Society of Swiss Naturalists.

One includes the independent states on the southern slopes of the Himalayas, Assam, the sources of the Bramaputra river as well as the southern provinces of China and a part of northern Birmah. The inhabitants are Mongols and the poison used is derived from *Aconitum ferox* or related species. How far northward this region extends is not known, but it is interesting to note that the Ainos on the island of Yesso likewise prepare an arrow poison from aconite tubers.

The second region lies to the south and includes the French possessions on the eastern side of Farther India (Cochinchina, Anam, Tonking), the peninsula of Malacca and the most part of the Archipelago (Java, Borneo, Sumatra, Mentawai islands, Celebes). The Philipines, New Guinea and

Australia are not members of this group. In the second region, the inhabitants are Malays, and use, not the bow and arrow as do the Mongols, but shoot small darts from tubes, using the breath as a motor force. The poison most used is the milk juice of a member of the *Moraceæ*, *Antiaris toxicaria*, the notorious upas tree, the root bark of *Strychnos* species, formerly always *S. ticuté*, and more rarely the rootbark *Derris elliptica* which also plays a rôle as a fish poison. The juice of the *Pangium edule*, rich in prussic acid, various *Apocynaceæ*, *Araceæ*, etc., inorganic substances as antimony sulphide in Borneo and arsenic in Malacca, are used.

Hartwich has made an especial study of arrow poisons used by the *Orang Sakeis*, a wild race of Malacca. He found in one small bamboo container a remnant of poison which contained antiarine, brucine, strychnine and derride. Two wood spatulas covered with the poison contained antiarine only. Darts to be used in blow tubes were found to bear antiarine, strychnine, in smaller or larger amounts, and, in one specimen, a trace of brucine. The author is led to the conclusion that more than one species of *Strychnos* finds use here.

[Schweiz. Wochenschr, f. Chem. u. Pharm. 36, p. 416.] *R. H. T.*

The Poppy in the Stone Age. — Dr. Hartwich of Zurich, in a paper before the 70th meeting of German Naturalists and Physicians, communicates very interesting results of his work on poppy products found in the houses of the Swiss lake dwellers.

As is well known, during the Stone Age, Switzerland was in places occupied by a race which lived in dwellings built on piles above the water and in these now submerged houses have been found many products now in use. Probably of all medicinal plants now in use, the poppy can be traced further back into prehistoric times than any other.

Whether the poppy was used as a narcotic at that early time or not is not to be definitely decided, but the use of other narcotics before the Stone Age is known. Since many other sources of oil were abundantly at hand, *Tilia*, *Corylus*, *Fagus*, *Linum*, etc., it is hardly probable that the poppy was used for this product alone, and the only other reason for its culture would be its use as a narcotic. It was cultivated in Switzerland and not imported from the Mediterranean lands.

Concerning the question whether the poppy of the lake dwellers came from the original form of the poppy, *Papaver setigerum*, or from one of the known culture forms, Dr. Hartwich concludes that it is very near the former but still showing effects derived from cultivation. The seeds are small and contain no calcium oxalate cells in the epidermis cells. The pods are small and correspond in form more nearly to the original form than to any cultivated variety.

With cultivation, the poppy loses more and more its original form. The

seeds become larger and lighter colored, and calcium oxalate comes to be formed in the epidermal cells. The capsules also increase in size, and no longer dehisce as do those of the original form. By reason of the degeneration of the placentæ, the capsules assume the form of a hollow sphere: in *Papaver setigerum* the capsules possess strongly developed placentæ and hence appear many chambered. Likewise cultivation changes the number and form of the stigma rays.

From a botanical study of material from the lake dwellers' houses, Hartwich concludes that more than four thousand years ago, the poppy was cultivated in Switzerland and was perhaps used as a narcotic.

[Pharm. Zeit. 43, p. 684.] *R. H. T.*

Plant Classification and Plant Constituents. — Dr. van Rijn, of Maastrich, at the 70th meeting of the German Naturalists and Physicians at Düsseldorf, raises the important but hardly longer novel question of the relation between plant constituents and the natural relationships of these plants. Instances of hints helpful to both botanist and chemist derived from this relation are cited. The identity of ulexine, the alkaloid derived from *Ulex Europæus*, of sophorine from *Sophora tomentosa*, of baptitoxin from *Baptisia tinctoria*, and of euchrestin from *Euchresta Hasfeldi* with cytisin from the seeds of *Cytisus Laburnum* is a case in point. Judging from chemical evidence purely, the author thinks ground is not lacking for regarding *Baptisia tinctoria* more nearly allied to the genus *Sophora* in which it was formerly placed.

[Pharm. Zeit. 43, p. 681.] *R. H. T.*

Caparrapi Oil. — According to B. F. Tapia this oil which is obtained from a *Laurinea, Nectandra caparrapi* in a similar manner as oil of copaiba, has been in use for a long time in Columbia. The domestic name of the tree is "*canelo*", probably on account of the cinnamon-like odor of its bark. The oil is used in place of balsam of copaiba.

The color of the commercial oil is more or less dark in consequence of the heat applied for the removal of water admixed with the oil; otherwise the oil would be almost colorless. It contains a monobasic acid, $C_{15}H_{26}O_3$, which can only be obtained from the light-colored oil in crystals, melting at 84.5° C. The oil devoid of this acid consists largely of a sesquiterpene alcohol, $C_{15}H_{26}O$, called caparrapiol. By dehydrating agents this is readily converted into a hydrocarbon caparrapene $C_{15}H_{24}$. Both this and the alcohol are easily polymerized, particularly under the action of heat, so that about two-thirds of the oil used remain behind in a resinoid condition when distilled with water.

[Report Schimmel & Co., Oct. '98, p. 8; from Bull. soc. chim. Paris (3) 19, p. 638.] *E. K.*

Eucalyptus Oils.—On page 27 of our Report of October 1887 we mentioned the cultivation of Eucalyptus in Portugal. We meanwhile have received three specimens of oil obtained there.

1. Oil of *Eucalyptus rostrata* Schlecht. has a pleasant odor and a high amount of cineol; sp. gr. 0.921, $\alpha_D = -1° 8'$ at 30°; soluble in 2 parts of 70 percent alcohol; renders no phellandrene reaction with sodium nitrite and glacial acetic acid.

2. The botanic origin of sample 2 has not been determined and it remains to be ascertained whether the oil is obtained from *Eucalyptus resinifera* Smith or *Eucalyptus rostrata* Schlecht. After comparing it with the oil of sample 1, we deem it more likely to be derived from the former species. It contains cineol, as is shown by the iodine reaction, phellandrene, and a terpene not yet found in the oil of *Eucalyptus rostrata*; its sp. gr. is 0.893, its angle of rotation α_D —17° 8′ at 30° and it is not soluble in 70 and 80 percent alcohol.

3. The oil of *Eucalyptus obliqua* L'Herit. contains, besides cineol, also phellandrene and is soluble in equal parts of 80 percent alcohol. Sp. gr. 0.914, angle of rotation α_D —7° 28′.

In consideration of the surplus of good eucalyptus oils rich in cineol now in the market, the introduction of the two last named oils into commerce would have but slight chances of success. The oil of *Eucalyptus rostrata*, so far as the specimen at our disposal is con erned, may be considered equal to the better kinds of eucalyptus oils.

Messrs. R. T. Baker and H. G. Smith of the technological Museum at Sydney have reported[1] on a new Australian eucalyptus oil derived from *Eucalyptus punctata* D. C. (*Eucalyptus tereticornis* Sm. *var. brachyconis*), called Grey gum. The tree also furnishes gum kino and a very hard wood. It grows in the entire coast-district of New South Wales, from Queensland to the borders of Victoria. The oil was obtained from the leaves and young twigs and represents the yield of nine distillations of material obtained from various localities. The yield of oil ranging between 0.63 to 1.19 percent, its specific gravity between 0.9122 and 0.9205 at 17°. Two of the oils were laevogyrate ($[\alpha]_D$ —0.92° and —2.52°), the other seven dextrogyrate ($[\alpha]_D$ +0.54° to 4.44°). An average sample of the various distillates had the following properties: Sp. gr. 0.915 at 16°, specific rotation $[\alpha]_D = +0.927'$; percentage of cineol determined by the phosphoric acid method[2] 46.4 to 64.5. The oil contains no phellandrene.

Another as yet unknown West-Australian eucalyptus oil has recently

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[1] On "Grey gum" (*Eucalyptus punctata* DC.) particularly in regard to its essential oil by R. T. Baker and H. G. Smith. Journal and Proceedings of the Royal Society of N. S. Wales. Vol. 31, p. 259—280.

[2] Whether the amount of cineol found may be considered correct, remains to be seen. Our efforts for the determination of the amount of cineol by the phosphoric acid process in oil mixtures of known percentage, rendered quite unsatisfactory results.

been described by Mr. E. J. Parry[3]. It is obtained from *Eucalyptus toxophleba*[4], called "York gum" on account of its abundant growth in the neighborhood of the city of York. The oil has a very disagreeable odor, irritating the organs of respiration to vehement coughing. Its sp. gr. is 0.8828 at 15.5°, its angle of rotation about +5°. Upon fractional distillation the following fractions were obtained: between 168° and 171°, 68 percent; between 171° and 176°, 14 percent; between 176° and 182°, 2 percent; between 182° and 187°, 8 percent; remainder, 8 percent. The oil contains phellandrene and 15 to 20 percent of cineol. Upon agitating the oil with bisulfite solution, it lost 20 percent of its volume, indicating a considerable percentage of aldehydes and ketones. Amyl alcohol, shown to be contained to a small amount in the oil of *Eucalyptus globulus*, and to which the irritating effect probably is due, could not be found in the oil of *Eucalyptus toxophleba*. The author expects to continue his researches.

At this opportunity we beg to call attention to some recently published essays on eucalyptus species with which we were favored by their authors: "On a new species of Eucalyptus from the Sydney-district" by Henry Deane and J. H. Maiden (Proceed. of the Linnean Soc. of N. S. Wales 1897, Part 3, Sept. 29.) and "Observations on the Eucalypts of New South Wales", III, by Henry Deane and J. H. Maiden (Proceed. of the Linnean Soc. of N. S. Wales 1897, Part 4, Nov. 24.)

[Report of S. & Co., Oct. '98, p. 26.] *E. K.*

Guaiacum Oil. — After the statement in our Report of April 1898, p. 29, that the botanical origin of guaiacum wood, called "*Palo balsamo*" in Argentinia still has to remain an unsettled question, Dr. Paetzold of the Pharmaceutical Institute of the University of Strassburg meanwhile has informed us that he has ascertained the origin of the wood beyond doubt, by comparison with authentic specimens and by reliable information. The former statement* that the wood is derived from *Bulnesia Sarmienti* Lor., a tree 40 to 60 feet high, belonging to the family *Zygophyllaceae* and closely related to *Guaiacum officinale* L. has proved to be a correct one. According to Griesebach it is indigenous in the Argentine provinces of Oran and Grande Chaco, particularly along the course of the river Rio Bermejo, a branch of the Rio Paraguay.

[Report of S. & Co., Oct. '98, p. 29.] *E. K.*

Lavender Oil. — A specimen of oil of lavender obtained from *Lavandula pedunculata* Cav., indigenous on the Iberian Peninsula has a rather indistinct and not pleasant odor so that the oil is hardly of any use for

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[3] London Pharm. Journ. Vol. 61 (1898), p. 198.

[4] This species is not mentioned either in F. von Müller's "Australian Plants", Melbourne, 1889, nor in Maiden's "Useful native plants of Australia", London and Sidney 1889.

* Schimmel & Co.'s Report, April 1898, p. 28.

perfumery purposes. Its specific gravity is 0.939, its optical rotation $\alpha_D = -44° 54'$, and it is soluble in equal volumes of 80 percent alcohol. Its high figure of saponification, 111.7, corresponds to 39 percent of the acetic ester of an alcohol $C_{10}H_{18}O$. Upon distillation of the saponified oil with steam, a light-yellow liquid passed over. The first fraction contains cineol as is shown by the cineol-iodol-compound. The odor of this fraction is indicative of the presence of thujon besides that of cineol.

[Report of S. & Co., Oct. '98, p. 31.]. *E. K.*

Matico Oil. — In the distillation of matico oil observation has been made that commercial matico—a mixture of leaves and spikes—is not always of uniform origin. Appearance and odor do not show any considerable differences, but the distillates do, particularly in their physical properties. These are due not alone to variations in the relative amount of spikes admixed with the leaves. For some time the distilled oils have even failed to yield the characteristic crystalline matico camphor. From one oil ($d_{15°} = 1.077$; $\alpha_D = -0° 25'$) we obtained, after repeated recrystallization from petroleum ether, a solid substance melting at 62°, which proved to be asarone. Upon combining with one molecule of bromine in petroleum ether solution, the addition product asarone bibromide was obtained in crystals melting at 85° to 86°. When oxidized by potassium permanganate asarylic acid melting at 144° was formed, characterized by its silver salt.

[Report of S. & Co., Oct. '98, p. 33.] *E. K.*

New Remedies.

Colloidal Gold. — By reducing a faintly alkaline solution of a gold salt with formaldehyde solution, and then submitting it to dialysis, Zzigmody has succeeded in obtaining gold in a colloidal condition. It is soluble in water, forming a ruby-red solution which leaves a brilliant residue of gold on evaporation. The metal is precipitated on the addition of sodium chloride, and is deposited on the positive pole on submitting the liquid to electrolysis.

[Pharm. Journ., 1898, p. 345; from Chem. Ztg.. 12, p. 332.] *E. K.*

Iodo-Spongine. — Harnack finds that iodine occurs in common sponges in the form of an albuminous compound, the yield being 1.5 to 1.6 percent. Iodo-spongine is obtained by macerating sponge for eight days in a 38 percent sulphuric acid in the cold. After this time the sponge is entirely disintegrated, leaving only a pulverulent residue. This is dissolved in soda solution, and precipitated with acid. It is then dissolved in ammonia, again precipitated by saturation with ammonium sulphate. The precipitate is purified by dialysis. Iodo-spongine is a light powder turning brownish black in the air. It is insoluble in water, sparingly soluble in alcohol, but readily

dissolved by alkalies and ammonia, from which solution it may be reprecipitated by acids and ammonium sulphate.

[Pharm. Journ. 1898, p. 345; from Zeit. f. physiol. Chem., 24, p. 570.] *E. K.*

In the **Therapeutic Use of Silver** a material change has recently been effected, inasmuch as silver nitrate, which though valuable possesses many drawbacks, and is more and more in danger of being forced out by other silver preparations. The old lunar caustic has found dangerous competitors in itrol (citrate of silver) and actol (lactate of silver), both of which were introduced into materia medica by Credé. These silver salts possess marked antiseptic power, are free from irritant effect (especially itrol), and according to the testimony of physicians form admirable dusting-powders for wounds. Judging from the consumption of these salts, they are gaining ground, though slowly. A prominent novelty, also, from a scientific point of view, is Credé's colloidal silver, that is to say, metallic silver soluble in water owing to its peculiar physical condition, which is obtained by reducing by means of ferric oxysulphate a silver nitrate solution mixed with an excess of citrate of ammonium. When this colloidal silver in the form of an ointment is rubbed into the skin it penetrates through the latter directly into the body, circulates in the blood and other fluids, and disinfects the organism in a high degree. This colloidal silver has enriched therapeutics with a most notable preparation. In all probability mercurial treatment likewise will soon be able to command a useful analogous preparation; for Lottermoser, by reducing, by means of stannous nitrate, mercurous nitrate in ditute solution, has just produced a colloidal, i. e., water-soluble, mercury, which may possibly be destined to play a part in the treatment of syphilis, in place of the caustic and irritating mercurial salts. For the sake of completeness it may be mentioned that gold likewise has already been obtained in colloidal form. Odd though it may sound now if we speak of water-soluble silver, mercury, and gold, it is not improbable, in view of the results thus far attained, that other substances hitherto considered as absolutely insoluble, will be brought into a water-soluble form, and this without any chemical change, merely by an alteration of the physical condition—certainly a fruitful prospect for medicine and pharmacy.

The demand for silver compounds that should not, like the nitrate and other silver salts, enter into immediate insoluble combinations with the albumin of the bodily fluids, but should penetrate more deeply into the tissues, has, as is well known, led some years ago to the production of argentamin and argonin. The former of these has almost entirely disappeared from view, while argonin, made by the Höchst Farbwerke, enjoys a pretty active consumption. Its use thus far has been but little impaired by protargol (put on the market by Farbenfabriken vorm. Fried. Bayer & Co.), which is unquestionably a very serviceable preparation. Protargol, a fine,

light-yellow powder, contains 8.3 percent of silver very firmly bound to a protein body; is, unlike argonin, soluble in water; produces no irritant effect, owing to the firm combination of the metal; but, as it contains a large percentage of silver, it has great bactericidal power according to Benaro, and is very effective in the treatment of gonorrhœa according to Neisser. The injections, which should be given several times a day, are begun with 0.25-percent solutions and their strength is gradually raised to one percent. It is to be noted that the use of protargol causes no staining of the skin or of the linen. At all events this preparation is deserving of careful attention in medical circles. Lastly, mention should be made of a new silver preparation of argentol (made by the firm of Frz. Fritzsche & Co., of Hamburg), a combination of silver with chinosol, known as non-poisonous and very powerful antiseptic. Argentol is more markedly antiseptic than silver nitrate and produces good results in wounds and ulcers, also in the form of an ointment with vaselin or lanolin as a base.

[Notes on New Remedies, 10, p. 3.] *E. K.*

Antipyretics.*

Group III.—Hydrazine-Derivatives.

Phenyl-hydrazine, $C_6H_5NH.NH_2$, the mother-substance of this group of antipyretics, may be considered as a derivative of aniline, in which an atom of hydrogen is replaced by an amido group. Although it apparently does not possess any therapeutic value, its acetyl derivative (hydracetin) is an antipyretic, but owing to its toxic characters it has not been favorably received. This experience served its purpose in the production of antithermin, agathin and orthin.

Hydracetin or Pyrodin, $C_6H_5NH.NH.CH_3CO$: acetyl-phenyl-hydrazine.

Antithermine, $C_6H_5NH.N:C(CH_3)CH_2.CH_2.(CO)OH$: phenylhydrazine-levulinate.

Agathin—

$$(C_6H_5)(CH_3)N.N:CH.C_6H_4.OH$$

salicyl-α-methyl-phenyl-hydrazone.

Orthin, $C_6\overset{(1)}{H_3}OH.NH.\overset{(2)}{N}H_2.\overset{(4)}{C}OOH$ hydrazine-*p*-hydroxy-benzoic acid.

Group IV.—Pyrazolone Derivatives.

Antipyrine, the prototype of this group, discovered by Knorr in 1884, was obtained by condensation of phenylhydrazine (an antipyretic nucleus) and aceto-acetic ester; the resulting body, phenyl-methyl-pyrazolone, was unsuited, however, for therapeutic employment. Utilising Filehne's previous experience with the substances of like physiological action derived from

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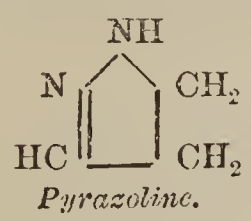
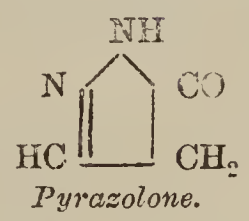
* Cont. from vol. 16, p. 478.

quinoline, kairine, and kairoline, a methyl group was introduced which resulted in the formation of the well-known antipyretic. The relationship of antipyrine may be traced from the five-membered cyclic base pyrrole—

Pyrrol.

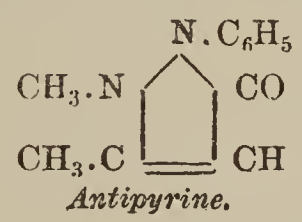


Pyrazoline.



Pyrazolone.

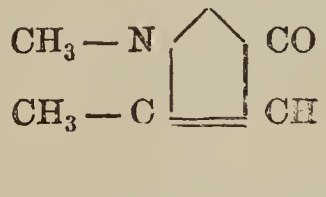
Iso Pyrazolone 5.

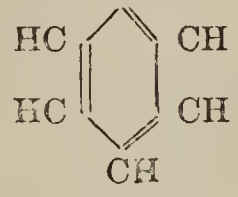


Antipyrine.

According as one or other of the two methylene (CH_2) groups in pyrazoline is replaced by a carbonyl group, two ketones are obtained; these are distinguished as pyrazolone 4 and 5. Antipyrine is a derivative of the latter, being then a phenyl 1, dimethyl 2,3, isopyrazolone 5.

The antipyrine molecule consists of two ring nuclei, namely, the "pyrazolone" ring of Knorr and a benzene ring, thus:—





The question as to whether the physiological action is due to the combination, or to one of the rings, or to certain groupings in these rings, has been studied by Filehne, who demonstrated that the pyrazolone nucleus alone was not capable of producing the effects of antipyrine; also, the benzene ring possesses no medicinal value. However, with the introduction of other groupings the configuration is changed, in this case, by the presence of two methyl radicles.

Riedel introduced a methyl group into the benzene nucleus of antipyrine, and produced the valuable—

Tolypyrine—Tolyl-dimethyl-pyrazolone—

This is stated to be more active than antipyrine.

Thoms suggested the introduction of an oxy-alkyl group in the benzene nucleus, but the antipyretic produced had toxic properties.

More successful has been the introduction of the physiologically active di-methyl amido group in the pyrazolone nucleus, yielding the valuable antipyretic:—

Pyramidone — Di-methyl-amido-antipyrine or dimethyl-amido-phenyl-dimethyl-pyrazolone—

It is claimed that pyramidone is about three times as active as antipyrine.

A large number of combinations have been made by fusing or heating together aqueous solutions of aromatic acids or phenols with antipyrine and tolypyrine, the resulting compounds possessing the properties of both constituents.

Antipyrine Salicylate or "Salipyrine"—

$$C_{11}H_{12}N_2O.C_6H_4(OH)COOH.$$

Tolipyrine Salicylate or "Tolysal"—

$$C_{11}H_{11}(CH_3)N_2O.C_6H_4(OH)COOH.$$

Antipyrine Benzoate.

Antipyrine Naphthol or *Naphthopyrine*—

$$C_{11}H_{12}N_2O.C_{10}H_7OH.$$

Resorcinol or *Resopyrine*, $C_{11}H_{12}N_2O.C_6H_4(OH)_2$.

Pyrogallol Antipyrine.

Antipyrine Mandelate or "Tussol"—

$$C_{11}H_{12}N_2O.C_6H_5CH(OH)COOH.$$

Iodopyrine, $C_{11}H_{11}IN_2O$.

Ferripyrine, $(C_{11}H_{12}N_2O)_3Fe_2Cl_6$.

Combinations of antipyrine with hypnotics possess hypnotic and analgesic action.

Hypnal,—Chloral antipyrine, $C_{11}H_{12}N_2O.CCl_3.CH(OH)_2$.

Dichloral Antipyrine, $C_{11}H_{12}N_2O(CCl_3CH(OH)_2)_2$.

Butyl Hypnal, $C_{11}H_{12}N_2O.C_4H_5Cl_3O.H_2O$.

[J. Soc. Chem. Ind. 1898.] *E. K.*

Practical Pharmacy.

On the Relation between the Fineness of Powders and their Ash and Potassium carbonate Content.—The result arrived at by K. Dieterich after a series of investigations is that the ash content increases with the fineness of the powder, whereas the potassium carbonate content diminishes. This is explained by assuming that in coarse comminution of short duration the fleshy portions containing potassium carbonate break down first and that

the skeleton (fibrovascular bundles) containing silica break down only in the preparation of very fine powders requiring a long period for communition. For the preparation of the powders three methods were employed. For the details of these methods as well as of analytical data the original will have to be consulted. [Pharm. Ztg., 43, p. 685.] *E. K.*

Benzin.—In a note on the subject of the petroleum ether of the U. S. P. the writer called attention to several discrepancies in the text of the last edition of our standard. In a report on a Suggested process for deodorized tincture of opium, E. Patch records the results of several fractional distillations of commercial benzin and gasolin which show how greatly these commercial articles vary from the U. S. P. benzin:

"The benzin of the pharmacopœia is defined as a transparent, colorless, odorous liquid, of sp. gr. from 0.670 to 0.675 and boiling point of 50° to 60° C. It should evaporate without residue.

Sample No. 1, purchased as benzin, had a sp. gr. @ 15° C. of 0.6814.

1000 cc. yielded 30 cc. of distillate below 50° C.
165 cc. between 50° and 60° C.
195 cc. " 60° and 73° C.
610 cc. above 73° C.

Sample No. 2, purchased as gasolin, had a sp. gr. of 0.6886 @ 15° C.

1000 cc. yielded 95 cc. of distillate below 50° C.
190 cc. " " between 50° C. and 60° C.
375 cc. " " " 60° C. and 73° C.
340 cc. " " above 73° C.

Sample No. 3, purchased as gasolin, had a sp. gr. of 0.650 @ 15° C.

1000 cc. yielded 750 cc. of distillate below 50° C.
140 cc. " " between 50° C. and 60° C.
60 cc. " " " 60° C. and 73° C.
50 cc. " " above 73° C.

It is to be regretted that the sp. gr. of each fraction between 50—60° was not taken. [From paper presented to the A. Ph. A.] *E. K.*

Chinetum Chinotannicum de Vrij calls the combination of *chinetum*' the well known mixture of the raw alkaloids from *Cinchona succiruba*, with cinchotannic acid. This preparation, which is much used in Holland, was considered a very active medicament by de Vrij, inasmuch as it represents a natural combination of the various cinchona alkaloids. It is prepared, according to Hager's Handbuch der phar. Praxis, by extraction of the bark, by means of acidulated water, precipitation with an excess of sodium hydroxide and drying. Naturally, a purer product is obtained if the cinchotannates are not precipitated from the crude extract, but when precipitated from the liquid extract prepared according to the suggestion of de Vrij. In place of the sodium hydroxide he employs a 20 percent solution of sodium

acetate and heats the cloudy liquid on a water bath until the precipitated cinchotannates have coagulated to a mass.

[Phar. Ztg., 43, p. 182: from Ph. Weekbl. 34, 44.] *Chas. W. Gorr.*

"Gregory's Powder."—Referring to a recent prosecution under the Sale of Food and Drugs act of Great Britain, John C. Umney criticizes the evidence offered therein and offers analytical data which are of interest. In the case referred to Dr. Muter, the public analyst, is said to have certified to the presence of 28 percent of magnesium carbonate while the defense claimed the magnesium oxid in the preparation rapidly absorbed carbonic acid, and that the presence of as much as 15 percent of carbonate could easily be ascribed to such absorption. It appears that the loss of weight of the compound rhubarb powder on calcination has been taken as representing loss of carbonic acid and water, and the amount of the official carbonate of magnesia present has been calculated from the loss, applying of course a correction for the ash resulting from the rhubarb and ginger.

To judge the accuracy of the analytical method, the author attempts to ascertain the amount of ash normally present in compound rhubarb powder. The ash of powdered rhubarb may vary from 25 percent in Shensi rhubarb, to 4 or 5 percent in the less dense Canton rhubarb, or averages about 10 percent. The ash of unbleached Jamaica ginger varies within the narrow limits of 2.5 to 3.5 percent. Samples of calcined magnesia taken from original bottles lost from 0.0 to 4 percent on ignition. Based upon these figures, compound rhubarb powder should yield from 65 to 72 percent of ash, and in accordance with this theory a powder made from rhubarb yielding 10 percent of ash and a ginger with 3 percent left on ignition a residue of 69.04 percent. Three samples which had been condemned as adulterated upon evidence similar to that quoted, yielded an ash amounting to 55.3, 52.4 and 51.2 percent, respectively, which deficiency of ash, calculated into official carbonate of magnesium, indicates the presence of more than 25 percent of the substance. It was easily proved that the method was not reliable. A powder, wherein 25 parts of magnesia had been replaced with the same weight of carbonate of magnesia effervesced far more briskly when treated with an acid than the samples condemned. In fact the effervescence of the latter was hardly noticeable. Further, on mixing the condemned samples with water, the red coloration of rhubarb appeared at once, showing that considerable hydrate was present, while the sample containing the added 25 percent of carbonate did not develop this color until some time had elapsed.

Further experiments demonstrated that the excessive loss on ignition, falsely ascribed to carbonic acid, was due to the presence of water of hydration absorbed by the calcined magnesia after its manufacture, as was shown by larger loss on drying at 110° of the suspected samples over that willfully adulterated. [Chem. & Druggist, 53, p. 515.] *W. A. P.*

Physiology and Therapeutics.

The Oxymethylanthraquinones and their Significance for Several Organic Cathartics. — A short time ago, G. Pedersen reported* that the substance which causes the "Borntraeger Aloetin reaction"† is an emodin, i. e. a trioxymethylanthraquinone, which has the formula $C_{15}H_{10}O_5$.

In the present article, Tschirch, in whose laboratory the foregoing investigation was conducted, has continued the investigation and reports that chrysophanic acid (dioxymethylanthraquinone), morindon (trioxymethylanthraquinone, an isomer of emodin) and aloexanthin (tetroxymethylanthraquinone) likewise give this reaction, which the author prefers to call the "oxymethylanthraquinone reaction". According to a modification of Borntraeger's method, whereby the drug is boiled, the filtrate shaken with benzol and the benzol solution shaken with ammonia, the last turning red, the following drugs gave the oxymethylanthraquinone reaction: several species of rhubarb and aloes, Rumex, buckthorn, bark and berries, cascara, Alexandria and Tinevelly senna, Morinda and Parmelia.

Natal aloes does not give it nor does turmeric or nutgalls, although the last two are often stated to do so. An alcoholic extract of nutgalls, however, gives the reaction. All the drugs that give the reaction are decided cathartics.

Commercial aloins contain emodin. This can be removed by extracting the dry aloins with anhydrous ether in which aloin is insoluble. Purified aloin deprived of emodin is but faintly yellow. Barbaloin crystallizes from water and alcohol with three molecules of water of crystallization and is very hygroscopic. It is only after prolonged heating at 100°—110° in a stream of hydrogen that the anhydrous barbaloin can be obtained. The analysis agrees very well with Groenewald's formula $C_{16}H_{16}O_7$. Emodin can be easily obtained from barbaloin by passing air, deprived of carbon dioxide, into a 1 p. c. potassium hydrate solution of barbaloin, acidifying with sulphuric acid and shaking out with benzol. The benzol solution is shaken with ammonia water and the emodin precipitated with hydrochloric acid and recrystallized from alcohol. Emodin so prepared melts at 211°. This formation Tschirch figures as follows:

$$\underset{\text{Barbaloin}}{C_{16}H_{16}O_7} + O_3 = \underset{\text{Emodin}}{C_{15}H_{10}O_5} + 3H_2O + CO_2$$

Tschirch shows that extracts of rhubarb, aloes, senna and frangula, deprived of oxymethylanthraquinones, will after boiling with dilute sulphuric acid again yield considerable quantities of oxymethylanthraquinones. Natal aloes does not. This shows the presence in these drugs of substances of a possible glucosidal nature which upon hydrolysis yield one of the oxymethylanthraquinones.

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* Archiv der Pharmacie 1898, vol. 236, p. 200.
† Z. f. anal. Chem. 1880, p. 165; see also Pharm. Review 14, p. 185.

Physiological experiments show that all the aloes, except natal aloes which does not split up into an oxymethylanthraquinone, are active cathartics, likewise rhubarb, senna and frangula. The oxymethylanthraquinones are physiologically active and Tschirch believes that the action of the above groups of cathartics depends upon these compounds. It does not depend entirely upon the oxymethylanthraquinones preformed in the drugs but rather upon their formation, by oxidation or hydrolysis, in the intestinal tract from compounds which can yield them. From an experiment with emodin-free aloin upon a guinea pig it appears that there is not an immediate peristaltic action of the intestines, whereas contractions are almost immediate when emodin is administered.

The spectra of a number of solutions were examined and the results presented in ten lithographic figures.

The author proposes to continue his investigations.

[Ber. d. deutsch. pharm. Gesellsch. 8, pp. 174—209.] *C. G. Hunkel.*

Literary.

Books and Pamphlets Received.

P. Blakiston's Son & Co. A pocket medical dictionary giving the pronunciation and definition of the principal words used in medicine and the collateral sciences. By Dr. George M. Gould. A new edition, entirely rewritten and enlarged. One vol., pp. 530. 1898. $1.00.

—— Commercial organic analysis. A treatise on the properties, proximate analytical examinations and modes of assaying the various organic chemicals and products employed in the arts, manufactures, medicine, with concise methods for the detection and determination of their impurities, adulterations and products of decomposition, by Alfred H. Allen.

Vol. IV: Proteids and albuminous principles, pp. 584. Second edition, revised and enlarged. 1898. $4.50.

Vol. I: Introduction, alcohols, neutral alcoholic derivatives, sugars, starch and its isomers, vegetable acids, etc., pp. 557. 1898. $4.50.

—— Physico-chemical methods. By Dr. J. Traube. Authorized translation by Dr. Willett J. Hardin of the University of Pennsylvania. One vol. pp. 238, with ninety-seven illustrations. 1898. $1.50.

—— Introduction to chemical-technical analysis. By Prof. F. Ulzer and Dr. A. Fraenkel. Authorized translation by Dr. Hermann Fleck of the University of Pennsylvania, with an appendix by the translator. One vol., pp. 188, with illustrations. 1898. $1.25.

—— Text-book of medical and pharmaceutical chemistry. By Dr. Elias H. Bartley, Professor of Organic Chemistry in the Brooklyn College of Pharmacy. Fifth edition, revised and enlarged. One vol., pp. 738, with ninety-six illustrations. 1898. $3.00.

—— White's Materia medica, pharmacy, pharmacology and therapeutics. Edited by Dr. Reynold W. Wilcox. Fourth American edition, thoroughly revised. One vol., pp. 704. 1898. $3.00.

Verlag von Gebrüder Borntraeger—Berlin. Symbolae antillanae seu fondumenta Florae Indiae Occidentalis edidit Ignatius Urban. Volumen I, fasciculus I continet: Ign. Urban: Bibliographia Indiae occidentalis botanica, p. 3—192. 1898. M. 10.80.

—— Deutscher Botaniker-Kalender für 1899, herausgegeben von P. Sydow. Ein Bd., pp. 198. 1898. M. 3.00.

Chemist and Druggist—London. Pharmaceutical formulas. A book of useful recipes for the drug trade, comprising formulas for toilet preparations and specialties, preparations for the hair, dentifrices, perfumes, household and culinary requisites, beverages, antiseptics and disinfectants, inks, varnishes, confectionery, medicinal compounds, and many other preparations related to the art of pharmacy. By Peter Mac Ewan. One vol., pp. 664. 1398.

Deutsche Verlags-Anstalt — Stuttgart. Lexikon der gesamten Technik und ihrer Hilfswissenschaften. Herausgegeben von Otto Lueger im Verein mit Fachgenossen.

XXXI. Abtheilung: Reibung—Scheidewasser.
XXXII. " Scheindiamant—Schweinfurtergrün.
XXXIII. " Schweinshaut—Stauanlagen.

1898. Preis des ganzen Werkes M. 175.00.

Verlag von Julius Springer—Berlin. Aus pharmaceutischer Vorzeit in Bild und Wort. Von Hermann Peters, Nürnberg. Neue Folge. Zweite vermehrte Auflage. Ein Bd., pp. XIV, 321. 1899. M. 7.00.

Smithsonian Institution—Washington. Annual Report of the Board of Regents, showing the operations, expenditures and condition of the institution to July, 1896. One vol., pp. LI, 727. 1898.

U. S. P. Committee of Revision and Publication—New York. Digest of criticism on the United States Pharmacopœia, seventh decennial revision (1890). Part II. One vol., pp. 146.*

John Wiley & Sons—New York. A text-book of volumetric analysis with special reference to the volumetric processes of the Pharmacopœia of the United States. Designed for the use of pharmacists and pharmaceutical students by Henry W. Schimpf. Third edition, revised and enlarged. One vol., pp. XXIX, 522, with fifty-nine illustrations. 1898. $2.50.

Author—Berlin. Zur Einführung des Paraguay-Thees. Von P. Siedler. Sonderabdruck a. d. Ber. d. d. Pharm. Gesellsch. 1898, Heft 8. Pamphlet, pp. 20.

L. H. Pammel—Ames, Iowa. Contributions from the Bot. Dept. Iowa Coll. of Agr. No. 10. 1. Comparative anatomy of corn caryopsis; 2. Histology of corn leaf; 3. Some studies on the seeds and fruits of Berberidaceae. Pamphlet, pp. 25. 1898.

Author—Ames, Iowa. The relation of certain bacteria to the production of butter. Reprint from Centralbl. f. Bakt. etc. Pamphlet, pp. 10. 1898.

Author—Comparative phenological notes by H. C. Irish. From 40th Report Mo. Horticult. Soc. Pamphlet, pp. 17. 1898.

Author—St. Louis. A rapid treatment of chancroid and ulcerative syphilitic lesions by A. H. Ohmann-Dufresnil. Reprint from St. Louis Med. & Surg. Journ. Pamphlet, pp. 16. 1898.

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* Persons interested in the work of revision of the U. S. P. can obtain a copy of the Digest by forwarding the necessary amount of postage (6 cents) to Dr. Chas. Rice, Bellevue Hospital, New York City.

Reviews.

AUS PHARMACEUTISCHER VORZEIT IN BILD UND WORT. Von Hermann Peters in Nürnberg. Neue Folge. Zweite Auflage. Verlag von Julius Springer, Berlin. 1899.

The history of pharmacy and of its related sciences is closely interwoven with that of medicine and a'chemy and offers the more tangible and practical interest perhaps in its biographical aspects. The literature of older countries and cultures, particularly of Germany, has quite a number of older as well as of more recent works bearing on or including the history of pharmacy and of its principal representatives. American pharmacy and its literature are of more recent growth and are still wanting in historical compends. None of he recent text-books and comprehensive dispensatories, aiming to fairly represent the domain of the science and art of pharmacy, evince any effort on the part of their authors towards a historical aspect and none contains a brief historical record or sketch or any biographical notes on the lives and labors of the principal builders of American pharmacy. This, although hardly in existence since two centuries, has its origin in and is closely connected with the general development of the traditional arts of medicine and pharmacy and with the common rise of the civilization and culture of the older world.

There may be no cause or room for introducing brief courses of instruction in the history of pharmacy in our University Schools or Colleges of Pharmacy, but modern text-books, mostly aiming at a most comprehensive representation of the sciences and art of pharmacy, might well take into some consideration the main features of the rise and development of pharmacy in the United States and the life-work of its principal representative men. This would not only be instructive, but would also tend towards a better understanding and appreciation of the present status of American pharmacy, of its national pharmacopœia, its educational institutions and its literature and journalism, and, moreover, would tend to impart to the rising generation of pharmacists and druggists a greater interest in and appreciation of their profession and to inspire it with higher ideals and with that "historical sense" now studiously cultivated in American universities and in the higher spheres of the scientific and public life of the nation.

The German pharmaceutical literature has, as before mentioned, a large number of older works bearing on the history of the art of

pharmacy and most of the text-books on pharmacy published during the first half of the present century, like those standard books well known by the older generation, of Trommsdorf, Hagen, Buchner, Geiger, Buchholz, Dulk, Scharlau, Marquard, etc., contain some brief outline or sketch of the history of pharmacy and particularly biographical notes on its foremost representative men. More recent and special works are those of A. Philips and Hermann Ludwig: Geschichte der Apotheker bei den wichtigsten Völkern der Erde. 2 Vol. 1858; Carl Frederking: Grundzüge der Geschichte der Pharmacie. 1 Vol. 1874; I. Berendes: Die Pharmacie bei den alten Kulturvölkern. 2. Vol. 1891.

To these more systematic handbooks have recently been added the well known sketches by Hermann Peters: Aus pharmaceutischer Vorzeit in Bild und Wort. This studious and ingenious pharmaceutical writer, the originator of the pharmaceutical historical department in the famous "Germanic National Museum" at Nürnberg (see this journal vol. 8, p. 219; vol. 9, p. 277; vol. 13, p. 130) has gleaned with skill and discrimination from the vast literary treasures of the mediaeval age a correlative array of characteristic and charming dissolving views, as it were, on the wonderful development, both realistic and chimerical, of the arts and the doctrines underlying the final realization of modern medicine and pharmacy.

The first volume of Mr. Peter's historical sketches appeared in 1886 and a second edition of the same in 1891. It treats in eleven essays, illustrated by nearly 100 cuts, of the following subjects: "Tutelary Gods and Patron Saints of Medicine and Pharmacy", "Dispensing Pharmacies in the 16th, the 17th and the 18th centuries", "Ancient Fire-places and Hearths used for Distillation and Sublimation", "Mediaeval Pharmacopoeias", "Medical Superstitions", "The quaint antics of alchemy".

In 1889 a second volume of these sketches appeared, of which a second and augmented edition has just been issued. This deals in seven chapters, illustrated by 104 cuts, on "Pharmaceutical Storerooms and mediaeval Materia Medica", Mineral drugs", "Animal drugs", "From Fable Land", "The Urinary vial", "Adulteration in Foods", "Medical Empiricism and Quackery", "Medical Voices from Parnassus".

The former editions of these volumes, which disclose a charming panoramic view of the quaint chaos of fallacies and superstition pre-

vailing in the domain of empirical research and scholastic doctrines and speculation during the mediaeval age, have been briefly reviewed in the pages of this journal (vol. 4, p. 286; vol. 8, p. 27; vol. 9, p. 51).

The edition of the second volume which has just been issued will meet with equal interest and appreciation as accorded to all writings of the talented historian of pharmacy at Nürnberg. The book cannot fail to raise or to increase in the present generation of pharmacists a greater affection and love for their time-honored profession.

Fred. Hoffmann.

INTRODUCTION TO CHEMICAL-TECHNICAL ANALYSIS by Prof. F. Ulzer and Dr. A. Fraenkel. Authorized translation by Dr. Hermann Fleck, Instructor in Chemistry, University of Pennsylvania. With an appendix by the translator. One vol., pp. 188, illustrated. P. Blakiston's Son & Co., Philadelphia. 1898. $1.25.

The German original which appeared somewhat more than a year ago was reviewed in the last volume of this journal (p. 163). It is not at all surprising that an introductory treatise of this nature should have immediately found a translator. Teachers in chemistry, even though they do not teach technical chemistry, must have felt the want of such a guide for such of their somewhat advanced students as desired work of this nature. As already stated (vol. 16, p. 163) the text presupposes an elementary knowledge of chemistry and a familiarity with qualitative and quantitative chemical analysis, both gravimetric and volumetric.

Scientific German is not always easy to translate. A number of comparisons made between the English and German texts seem to indicate that the translator has on the whole been equal to his task. No errors that would in any way seriously mar the value of the book as a guide were noticed. A few irregularities seemed to indicate some haste at certain points, but those noticed were not serious and can readily be corrected when a new edition is published. The type is clear and the paper is good, but the zinc etchings, though they show what they are intended to illustrate, do not come up to the originals in clearness. The book will undoubtedly find many teachers and students to welcome it who were barred by the language from freely using the original. The appendix of seven additional problems pertain principally to the foods and beverages and includes one spice.

E. K.

PHARMACEUTICAL FORMULAS. A book of useful recipes for the drug trade. Comprising formulas for toilet preparations and specialities, preparations for the hair, dentifrices, perfumes, household and culinary requisites, beverages, antiseptics and disinfectants, inks, varnishes, confectionery, medicinal compounds, and many other preparations related to the art of pharmacy. Collated chiefly from "The Chemist and Druggist" and "The Chemists' and Druggists' Diaries", with annotations. By Peter Mac Ewan. Published at the Offices of The Chemist and Druggist, Cannon St., London, E. C. 8vo, pp. 664.

The incentive to the preparation of this book, as the editor states in the preface, arose from the fact that so many of the formulas published during past years by The Chemist and Druggist having been found of such practical utility it had been frequently suggested that the whole of such formulas should be gathered together and published as a book. The accomplishment of this task was evidently by no means easy, for in addition to the labor of classification the editor has taken the pains to prove the merits of a large number of the formulas by experiment and to confirm them by reference to the original sources, so as to embody in the work only those of recognized and positive value. It is therefore a special feature of the book that its contents are in a great measure based upon requests from more than a generation of pharmacists for assistance in supplying articles for which they could discover no recognized formulas, and the best of the replies in fifty volumes of The Chemist and Druggist have been concentrated and incorporated in the work. In covering so large a field and so considerable a period of time it is evident that the daily needs of the pharmacist have been duly and thoroughly considered.

The scope and comprehensiveness of the work is indicated by its descriptive title, which also corresponds with the classification adopted. For the purpose of rendering it more widely useful, a concise exposition of the exquivalents of British and metric weights and measures is given, together with the differences between some American and English terms, as the fluidounce, pint, etc., and finally a very complete index is provided, which is so essential an adjunct to a work of this character.

It would hardly be possible within the limits of a review to more than intimate the extent of practical information condensed within the pages of this book, and the corresponding value which it must

possess for the busy and enterprising pharmacist, for many working formulas are thus made available which would otherwise either be sought for in vain, or which perhaps could only be found after a protracted search through a considerable library of periodical literature.

It is true that many books of collated formulas, designed for pharmaceutical, technical or other purposes, have previously been published, both in English and in other languages, and some of these have their distinct merits, whilst others have been compiled with so little discrimination as to lead only to disappointment. The work of Mr. Mac Evan is, however, very much more than a classified collation of formulas, and those who consult it may be assured that they will also derive incidentally a great deal of interesting and important information regarding the classes of preparations of which it treats, for it includes many scientific notes pertaining to the chemistry of the substances employed, the history of individual preparations, hints relating to dispensing, etc. When we consider that the editor is not only an accomplished pharmaceutical chemist, but that through long journalistic experience he has had specially favorable opportunities for determining the scope and limitations which such a work should possess, we should perhaps not be surprised to find that the knowledge, skill and judgment which he has brought to the task are clearly manifest throughout the book.

The fact that the book under notice has passed through three editions within the short period of about five months must indeed afford to the editor the most gratifiying evidence of the favor and appreciation with which it has been received by pharmacists throughout the British Empire, whilst at the same time it presents the best assurance of its substantial merits to those who may still be unfamiliar with it. The hope may therefore be expressed that it will receive an equally cordial reception at the hands of American pharmacists, upon whom the demands of their patrons are certainly none the less varied nor more limited than those which their British colleagues are daily required to meet, and so many of which can be met in a satisfactory and profitable manner by the formulas which are now rendered available. *F. B. Power.*

DEUTSCHER BOTANIKER-KALENDER für 1899. Herausgegeben von P. Sydow. Verlag von Gebrüder Borntraeger, Berlin. 1898.

This little volume of almost two hundred pages is an exceedingly convenient and useful one. The first hundred pages are for memo-

randa, having the month, day of month, and week printed at intervals on the page. In addition to the memorandum, the book includes a table of the denominations of money in general use in the principal countries of the world; tables of weight and measure of the principal countries, telegraph and postal rates in different countries, rules for botanical nomenclature as recognized at Museums and Botanical garden of Berlin, an index to Cryptogamic exsiccatæ, index to a long list of botanical gardens throughout the world, an alphabetical list of botanical and natural scientific museums and collections of the world, and an alphabetical list of separate collections to be found in the herbaria and museums.

An excellent quality of paper, clear type, compact form and size, and a very serviceable linen binding add much to the usefulness of the little volume. It certainly deserves a hearty welcome and doubtless will receive it. *L. S. Cheney.*

Dictionnaire de Physiologie par Charles Richet. Tome III, troisième fascicule, avec 130 gravures dans le texte. Félix Alcan, Paris. 1898.

The present number of this work deals with subjects from chloroform to cobaye. Among the most important physiological articles are those dealing with chlorophyll, the chlorophyll function, chloroform, chromatophores, chyle, vibratile cilia, circulation and coagulation of blood.

The first two subjects, although botanical in their direct relations, concern themselves with the manufacture of organic substance and thus through the food necessity affect all animal life and through the fuel question, all civilized existence. The subjects are treated very fully, about seventy-five pages being devoted to them. Literature citations are abundant throughout the text, thus giving a clue to the most important results of the individual investigators. Since the bibliography is brought up to a very late date, these articles constitute a valuable summary of the present state of our knowledge on the subjects discussed.

The animal side of physiology, as would perhaps be expected, seems to receive more attention than the vegetable side. Under the subject of chromatophores those found in animals only are considered. Of course, the structures in plants and animals are at bottom very different things, but important in their respective places.

In what way an animal chromatophore is more truly a chromatophore than the vegetable organ known by that name or why the latter should be dismissed at this place with hardly a mention seems to confirm this thought.

In the discussion of vibratile cilia, the action of various chemical substances on ciliary motion is discussed. The osmotic and the chemical action of these substances is mentioned, but the significance of recent work bearing on the relation between physiological action and the dissociation of the molecule, although being in point and helpful in explaining the relations found to obtain, seems not to be recognized by the eminent author of this article (J. W. Engelmann of Berlin).

A minute analysis of the contents of this number is not necessary nor desirable in this place. Enough has been said to show the high character and great usefulness of the work of which this forms a part.

Every institution in which physiology is studied either in its zoological or in its botanical aspect should have this work. Owing to its size and expensiveness it will probably find its way into but few private libraries. *Rodney H. True.*

PHYSICO-CHEMICAL METHODS. By J. Traube. Authorized translation by Willett L. Hardin. Pp. 238. P. Blakiston's Son & Co., Philadelphia. 1898. Cloth, $1.50.

This book is a translation of the German edition (1893) with no changes except the addition of a few references which the translator has enclosed in brackets. The book is intended to be a laboratory guide in making physico-chemical measurements. Detailed descriptions of apparatus and methods of using the same are given. It is to be regretted that some of the newer methods that have been devised have not been introduced into the translation. The additional references given by the translator compensate only in part for this deficiency. The determination of the E. M. F. of galvanic chains has become important in physico-chemical work, yet the book contains nothing on this subject.

The cuts are exact reproductions of those in the original German edition. While some of them are fairly well executed, many are crude and inaccurate. So, for example, in Figs. 13, 17 and 18 tubes that should be open are represented as closed. In Fig. 30 the tube of the thermo-regulator is represented as connected with the wall of the

bath. In Fig. 26 the electrical connections of the platinum discs of resistance cell of Kohlrausch have been omitted and the electrolyte is represented as partly filling the tubes that ought to contain these connections. To be sure these errors occur also in the original, but they ought to have been corrected. There is no excuse for reproducing these faulty cuts, especially as reviewers of the German edition have previously called attention to these inaccuracies. (See for example the review by Karl Seubert, Zeitschr. f. anorgan. Chem. 6, p. 87.)

A comparison of the translation with the original shows that the translator has earnestly endeavored to reproduce the thought expressed by the author, and has on the whole succeeded fairly well. Many difficulties were encountered in making a good translation. It has seemed to us that if the translator had attempted to be a little less literal in his translation he might have preserved the thought just as well and have clothed it in better idiomatic English.

The book is printed in clear type on good paper. The cloth binding, though not elegant in appearance, is substantial. As laboratory guides in physico-chemical measurements in the English language are few, and as the book contains descriptions of some methods that are not given in other manuals of the same subject, it will no doubt be welcomed by many English readers. The references to original articles which the book contains are very helpful.

Louis Kahlenberg.

A Text-book of Materia Medica, Therapeutics and Pharmacology by Dr. George Frank Butler, Professor of Materia Medica and Clinical Medicine in the College of Physicians and Surgeons, Medical Department of the University of Illinois, etc. Second edition, revised. W. B. Saunders, Philadelphia. 1898. Cloth $4.00, sheep $5.00, net.

Several things are required of a text-book for general use: it must be abreast with the times in regard to subject matter; it must present this subject matter in the best possible style; the mechanical get-up of the book should be as good as possible.

In regard to the subject matter of the book under discussion, much must be said in its favor. Care has been taken to incorporate the results of important recent therapeutic and pharmaceutical investigation into the text. A discussion of the serum therapy finds place and the history of its development is sketched in outline.

Organotherapy (Animal Extracts) is also given attention. A chapter is devoted to a statement of untoward effects accompanying the use of various drugs. The section dealing with the pharmaceutical aspect of the subject is very full as is that dealing with the subject of weights and measures. These parts are contributed by Prof. C. S. N. Hallberg.

The system of classification of drugs followed is adapted from that used by Prof. W. N. Thompson of New York and is laid out on essentially therapeutical lines. "Practical utility" is claimed by the author as the chief merit of the system. Medicines are divided into two great classes. Symptom- or Functional-Medicines are "those employed in cases which are susceptible of immediate relief by the exhibition of a single dose." Disease Medicines are "those used in cases which cannot be relieved by a single dose of any remedy, but require repeated and prolonged administration." This class is subdivided, bringing disease-medicines into three groups: Restoratives, Alteratives and Antiseptics. While this system may have the merit of "practical utility", one can concede to it little more. As in any measure an expression of our present scientific knowledge, no claim can be made for it and no claim is made for it by the author.

In the treatment of individual subjects, evidence indicating a progressive policy is not lacking. The botanical nomenclature used is put in agreement with the Pharmacopœia. The ordinary system of weights and measures is made use of, but the metric equivalents are added in parentheses. The metric system is favored in the discussion of the general subject and the argument is clinched by the citation of the fact that the Federal Constitution declares that a census be taken every ten years and that state censuses are taken every five years, one-half of ten. Surely the metric system should prevail!

The work closes with a chapter on prescriptions. A useful feature should be that dealing with the language and grammatical constructions of prescriptions.

In regard to the manner of presentation, the author is most successful when describing the action of drugs. Here simple, clear statement prevails. In places, however, where broad discussion is found, simplicity and clearness are sacrificed to wordy circumlocution. Foreign and fancy phrases are indulged in to the detriment of the author's influence. It seems to the writer undignified and out of place to select the pages of a text-book as the place to cast flings at forms of medical faith that should command respectful terms, should

the author find it desirable to make mention of them. Moreover, such a phenomenon as Christian Science seems to the writer to hardly demand discussion in a book of this nature.

Two half tone plates, illustrating the toxic action of gelsemium and strychnine, and a number of simple instructive diagrams designed to aid the student in understanding the method of operation of different types of drugs, are very useful and valuable features.

The mechanical make-up of the book is both attractive and durable. *Rodney H. True.*

A Pocket Medical Dictionary giving pronunciation and definition of the principal words used in medicine and the collateral sciences including very complete tables of the arteries, muscles, nerves, bacteria, bacilli, micrococci, spirilli, and thermometric scales, and a close list of drugs and their preparations, in both the English and metric systems of weights and measures, by Dr. George M. Gould. A new edition, entirely rewritten and enlarged, including over 21,000 words. One volume, pp. 535. P. Blakiston's Son & Co., Philadelphia. 1898. $1.00.

The above, exhaustive title with the well and favorably known name of the author ought to tell the whole story and make comment unnecessary. The author desired to improve over other pocket lexicons by including live words, by defining many more words and by making the definitions more complete, so as to avoid "vagueness and inaccuracy". In the last particular he has not always succeeded. Thus e.g. antifebrine, without any reference to the prime acetanilide or to its chemical composition whatever, is merely defined as "a white, crystalline powder, with antipyretic powers". For antisepsin the formula C_8H_8BrNO is given which is perfectly useless. Its definition as bromacetanilide, which would not have required more space, would have defined it chemically and also indicated its therapeutic relationship with acetanilide or antifebrine. Under antinonnin, the chemical synonym is given, but none of its uses are mentioned. Thus there appears no system in the definition of chemical compounds. Methyl alcohol is said to be narcotic, many simple amido compounds are unfortunately called ptomaïnes.

One does not wonder so much at these inaccuracies, but that there are not more and worse ones, if one considers the amount of work accomplished by the author. No doubt, the medical terms are more accurately defined so that the pharmacist who has no larger medical dictionary may find this one serviceable indeed. The table of doses will be a very welcome addendum. *E. K.*

SUPPLEMENT.

Universities and Colleges.

Scientific Education in England. In an afterdinner speach before the Metropolitan College of Pharmacy, Dr. F. B. Power, for nine years Director of the School of Pharmacy of the University of Wisconsin, and now Director of the Wellcome Research Laboratories, London, contrasted scientific education in England fifty years ago with what it is to-day. The following abstract of his address is taken from a recent number of the *C. & D.* "Sir Norman Lockyer, in a recent address at the Royal College of Science, mentioned that in the late fifties a senior wrangler came to London from Cambridge expressly to study crystals, prisms, and the like in the opticians' windows. Of laboratories there were none; of science-teaching in the schools there was none; there was no organization for training science-teachers. Very few chemists were employed in chemical works. There were a few so-called chemists at bricklayers' wager—not much inducement to study chemistry, even if there had been practical laboratories where it could have been properly learnt. The Prince Consort, in 1845, gave the first impetus to higher scientific education by the foundation of the College of Chemistry, under the direction of Professor Hofmann; the School of Mines was established in 1851, and in the following year, in the speech from the throne at the opening of Parliament, her Majesty mentioned that the advancement of the fine arts and of practical science was worthy the attention of her legislators, and following upon this suggestion the Science and Art Department was founded in 1853. The College of Science and the School of Mines were amalgamated to form the Royal College of Science, over which at this time the distinguished teacher of chemistry (Professor Tilden), who comes from the rank of pharmacy, presides. In the scientific developments of our time pharmacists have performed an important part. In a system of technical education, such as that of pharmacy, recognition should no doubt be taken of the changes constantly taking place, not only through the advancement of pure science, but in the expansion of old or in the creation of new industries based upon applied science, for by these evolutionary processes the practice of the pharmaceutical as, as well as commercial methods, is more or less directly affected. The influence of these industrial developments is apparent in every country, and those pharmacists will be the most successful who regard the altered conditions produced thereby as inevitable, and who are capable of judiciously adapting themselves to them. Dr. Power then referred to the conditions of pharmacy and pharmaceutical education in the United States within his own experience, and stated how the proving of competent skill and knowledge had there become universal within the past thirty years. From this he passed on to a consideration of Pharmacopœias and exclusion of chemical-manufacturing processes from them, with co-relative greater attention

given to the testing of chemicals. This latter change, he said, shifted the sphere of the pharmacists' activity from the manufacturer to that of the analyst, and involved a greater breadth of chemical knowledge and skill. Pharmacy to-day might be in a state of transition, but it was none the less true that its security would continue to rest on thorough education in those branches of science which its practice involves; for whatever may be the protection afforded by the State, success will always be largely dependent upon, and proportional to, individual ability and effort. In such fields as bacteriology, sanitation and hygiene, he thought the pharmacist by his education was a fit student, and that in such fields there was abundant scope for appreciative and profitable labor.

Scientific Societies.

A Pharmaceutical Centennial. — The Magdeburg Apothecaries Conference celebrated the hundreth anniversary of its existance Nov. 22 and 23 of last year. The history of the Raths Apotheke at Magdeburg dates back as far as 1377. Like all trades and professions, pharmacy suffered greatly by the destruction of Magdeburg by Tilly. At the close of the last century, the city had but five apothecary shops, the proprietors of which founded the present organization. This now includes seventy-seven apothecaries not only of the city but of the district by the same name, also of Anhalt and Braunschweig.

Association of Swiss Scientists. Like in Germany, pharmaceutical science is better represented at the meetings of the general scientific association of the country than at the national apothecaries association. In the pharmaceutical section at Bern the following papers were read:

Schaerges—Basel: Ueber Guajacol und dessen Derivate.

Schaer—Strassburg: Ueber merkwürdige physikalisch-chemische Eigenschaften des Chloralhydrates und deren Verwendung in der pharm.-chem. Analyse.

Schumacher-Kopp—Luzern. Beiträge zum Werte der Furfurolreaction bei Oelanalysen.

Hartwich—Zuerich: Ueber einige Pfeilgifte von der Halbinsel Malakka.

——: Ueber falsche Sarsaparilla.

Nienhaus—Basel: Ueber die Holzstofffabriken der Schweiz mit besonderer Berücksichtigung der Kocher.augen.

Kunz-Krause—Lausanne: Ueber die Farben- u. Fällungsreactionen der Tannoide und deren Abhängigkeit von der Natur, bezw. Constitution des einen, bezw. der beiden Reactionscomponenten.

——: Ueber ein natürliches System der Tannoide.

Aweng—Barr: Beiträge zur Kenntniss der wirksamen Bestandtheile von Cortex Frangulae, Radix Rhei und Folia Sennae.

Conrady—Leutmannsdorf: Ueber Decocte und Infuse.

B. Studer: Der Apotheker als Pilzexperte.

Tschirch—Bern: Ueber krystallisirtes Capaloin.

——: Ueber Xanthorhamnin aus den Fruct. rhamni cathartici.

——: Violette Chromatophoren in der Fruchtschale des Kaffee.

Tschirch u. Farner: Studien über den Stocklack.

Issleib-Bielefeld: Ueber Cearin.

Tschirch und Halbey: Ueber das Olibanum.

PROCEEDINGS RECEIVED:—

New Jersey Pharm. Assoc. — Proceedings of the twenty-eight annual meeting held at Summit, May 18 and 19, 1898.

New York Pharm. Assoc. — Proceedings of the twentieth annual meeting held at Rochester, June 28 to July 1, 1898.

Biography and History.

Max von Pettenkofer. — In honor of the eightieth birthday of this wellknown medical and sanitary chemist, who not only emenated from the ranks of pharmacy, but who for a long number of years was court apothecary at Munich, Dr. A. Kohut contributes a "Gedenkblatt" to No. 96 of the Pharmaceutische Zeitung for last year. The memorial treats principally of the part Pettenkofer played in securing the services of his former Giessen professor for the University of Munich, also of the aid which he rendered through his "Hofapotheke" in improving the preparation of Liebig's extract of beef and of making it on a commercial scale. A brief outline of the organization of the Fray-Bentos Co., organized by Gilbert is also given.

It may be known to very few on this side of the Atlantic that Pettenkofer wrote poetry. The article referred to contains some of his "Chemical Sonnets" written in 1844—45, and which are now published for the first time. One of these, viz. the one on Lavoisier, may be added to this notice of the world famed octogenarian.

Du legtest prüfend Alles auf die Waage,
Ein Mann der Wahrheit und Gerechtigkeit,
Das Zünglein war dein scharfes Schwert im Streit,
Ob es herüber, ob hinüber schlage.

Und alle Wahrheit uns'rer weisen Tage
Ragt über Deinem Wissen noch nicht weit,
Wir machten wohl die Wege lang und breit,
Doch gab dein Genius Richtung uns und Lage.

Wie lohnt Dein Volk das Herrliche, das Wahre?
Verehrt es Dich gleich einem halben Gotte?
Durchflicht's mit gold'nem Lorbeer Deine Haare?

An's Kreuz mit ihm! So tobt die wilde Rotte,
Man reisst wie einen Priester vom Altare
Dich von der Arbeit weg — und zum Schafotte.

Rafinesque.* — Constantine Rafinesque was probably the first man since our national independence to attempt any approximation to thoroughness in the study of natural history in America. He was the son of a French resident at Galatea, a suburb of Constantinople, where he was born 1784. He came to Philadelphia, and there prosecuted his studies in the natural history of the country with such facilities as he could obtain. Returning to Europe, he spent some years in Sicily, and became the author of several works in the French language. He came

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* Clipped from an article entitled "Rafinesque and Reformed Medicine" in the Ecl. Med. Journ. The cut was obtained through the kindness of Prof. J. U. Lloyd.

again to this country in 1815, but had the misfortune to be shipwrecked off the eastern shore of Long Island, losing all his books, manuscripts, and other property. He thus came penniless, but by no means disheartened. He made a journey, soon afterward, into the several States west of the Alleghenies and south of the Ohio, which then constituted "the Great West."

In 1817 he was appointed to the chair of Botany in Transylvania University, and several years afterward he returned to Philadelphia, where he remained until his death in 1841.

He was from boyhood a zealous student of natural science. He observed closely, and made deductions with rare accuracy. His work of the Natural History of the Ohio

Your Friend
C. S. Rafinesque

Valley was of unequalled merit at that time. He was outspoken in his opinions, indefatigable as an explorer and investigator, and possessed of remarkable originality.

He spent a long time in the several districts in the valley of the Mississippi, and was a careful observer of the native people then occupying those regions, the Choctaws, Chicasaws, and Cherokees of the South, and also the tribes living north of the Ohio river. He was diligent to learn their procedures with the sick, and the remedies which they employed. His impressions in favor of a vegetable materia medica, and of a reformed practice of medicine in accordance with it, were thus deepened into convictions, which he recorded in no equivocal language in his Manual of Medical Botany, a work published in 1822. He declared without qualification that "the popular belief that every country produces simples suitable to cure their prevailing local diseases is not devoid of truth." He also declared that "there are many ways of effecting cures by equivalent remedies, but vegetable substances afford the mildest, most efficient, and most congenial to the human frame."

The purpose as well as the trend of the work of Rafinesque, was to regenerate the art of medicine in his adopted country, so that it might be an art of healing as well as an exercise of the mental faculties. He had witnessed its numerous failures, and believed them to be the result of obnoxious medication, superadded to the ignorance of the prescribers. He sought to remedy this by bringing into notice the indigenous medicinal plants of the United States, explaining their technical classification in simple language, and setting forth definitely their specific virtues.

He performed an infinite amount of labor to collect his material. He made journeys over fourteen out of the twenty-four States then comprising the American Union, accomplishing over eight thousand miles of actual travel. He laid all under contribution, holding a voluminous correspondence with leading botanists and physicians, and never hesitating to seek from the illiterate the results of their experience. He never despised knowledge because it came from an uncouth mouth. It was his purpose to make botanical learning accessible to all, and he sought to gather up from all. He tested his peculiar facts on himself and others. In this way he employed fifteen years before giving to the public the result of his labors. On the tenth of September, 1841, he passed from among the living. His scientific works were collected and published in 1884.

Bibliography.

The Alumni Association of the Maryland College of Pharmacy has recently circulated a very neatly gotten up Alumni News-Letter among its members. It is one of the most successful attempts of this kind that we have seen and ought to have been very welcome to the Maryland alumni.

A calendar for 1899 has been received as usual from the Pope Manufacturing Co., which has issued its well and favorably known desk pad form with space for memoranda. The American Book Co's School Calendar contains much valuable information concerning postage, holidays, etc. The Germania calendar presents a colored halftone of Bismarck.

CATALOGUES RECEIVED:—

J.-B. Baillière & Fils—Paris. Revue mensuelle de bibliographie médicale. Nov.-Dec. 1898.

Ernst Guenther's Verlag—Leipzig. Pharmazeutische und naturwissenschaftliche Werke.

Lemcke & Buechner—New York. Monthly bulletin of world literature. No. 10.

U. S. Dept. of Agr.—Washington. Monthly list of publications. Nov. 1898.

Commercial.

The December 1. issue of Merck's Report contains a reply by Mr. J. Jacobs, Chairman of the Commercial Section of the A. Ph. A., to an article by Dr. Geo. F. Payne in the October 1. issue of same journal. From this reply we abstract the following paragraph which every druggist in this country should read and think about.

"All of us will have to realize that the commercial side of pharmacy will always have to be modified by the ruling ideas of the general mercantile world as modified by the general impress that we are enabled to stamp upon those ideas as pharmacists. If the people of our country in a great majority shall sustain and build up a mercantile system 'which by combination and arranged conditions can controll the prices of goods and cut off from supplies those who persist in selling goods below the prices desired by the majority,' then the pharmacists who enter and promote such a system will learn to regret their participation in that system. It is contrary to the genius and the best principles of American manhood to set up and maintain unopposed, such a nefarious system. It will be much more to the honor and glory of our profession to keep aloof from such systems, and to take our stand squarely and boldly for just prices based upon supply and demand and true cost of production, allowing full measure for pharmaceutical skill and talent, but disdaining to legislate or resolve a value of goods not possessed intrinsically or added by our honestly professional labor. The dignity and the true worth of our profession will be far more grandly advanced, if, with the superior scientific knowledge and training we possess as merchants, to furnish to the suffering sick of our communities, pure and efficient curative agents at prices fixed by their intrinsic market value and not by the arbitrary demands of the greeds of monopolists or combine, and receiving a fair compensation added for our special skill, thus stand midway between the greed on the one hand and ignorance and prejudice on the other."

PROCEEDINGS RECEIVED:—

Nat. Assoc. of Retail Druggists.—Proceedings of the Delegate Convention at St. Louis, Oct. 17—20. 1898.

PRICE-LISTS & CATALOGUES RECEIVED:

Eimer and Amend—New York. 1) Prices current of chemicals, minerals etc., 1898: 2) Supplement of price-list of C. F. A. Kahlbaum: 3) The Jewell water still: 4) The tintometer.

Fritzsche Bros. — New York. Wholesale price-list. Dec. '98.

Kny-Scherer Co.—New York. Descriptive catalogue. No. 4: Laboratory supplies.

Roessler & Hasslacher Chem. Co.—New York. Price-list, Dec. '98.

Schering & Glatz — New York. 1) Price-list of fine chemicals, Nov. '98. 2) Price-list of medicinal and toilet soaps manufactured by J. D. Stiefel.

Zimmer & Co. — Frankfurt a. M. Special quotations, Nov. '98.

Pharmaceutical Review.

VOLUME 17. FEBRUARY, 1899. NUMBER 2.

Editorial.

The delivery of the Proceedings of the American Pharmaceutical Association and of the American Association for the Advancement of Science on the very same day naturally courts a comparison of the two volumes along certain lines. The A. A. A. S. met in Boston during the week beginning August 22, the A. Ph. A. a week later in Baltimore. The Proceedings of the former constitute a volume of lxxxv+658 pages and contain, in addition to the lists of members and the minutes of the General Secretary, the address of the President, the addresses of the chairmen of the numerous sections, and only abstracts of the papers read. Minutes of the proceedings of the sections are not recorded, neither discussions. Many papers are mentioned by title only. The Proceedings of the latter association constitute a volume of almost again as many pages, viz. xxx+1225. It contains the papers and practically all of the discussions in full, and in addition the Report on the Progress of Pharmacy. It becomes apparent at once that the editing of the second volume is by far the more difficult task. Yet it was accomplished within the same time or rather a trifle less. The A. A. A. S. pays its Permanent Secretary a salary of $1,250.00 and its Assistant Secretary $720.00, allowing a further $100.00 for janitor service. The General Secretary of the A. Ph. A. receives a salary of $750.00 and was allowed $500.00 additional at Baltimore for assistance in editing the Pro-

ceedings in order that they might be distributed at the end of ninety days. When the motion requiring the distribution of the Proceedings at the end of ninety days was passed, Ex-President Whitney, who fathered this motion, naturally had in mind the Proceedings of 1897 with 849 pages and those of 1896 with 963 pages. If the General Secretary had met with no delay whatever on the part of the other officers of the Association and its members, whose papers were not ready in time, he might possibly have lived up even to the letter of the requirement. As it is, the Association has every reason to congratulate itself upon the economic and expeditious publication of its proceedings.

Several years ago, after a period of great liberality in the disposal of the funds of the Association, it was found necessary to curtail expenses. One way of accomplishing this was successfully carried out in cutting down some of the verbose discussions and thereby reducing the printer's bill. As long as discussions are to be recorded it is a very difficult matter to know just where to draw the line. It would appear to some that if the discussions are reported in the pharmaceutical press, a rehashing of them in the Proceedings of the Association is an unnecessary expense. However, so long as a majority of the members are willing to have the income of the association spent in such a manner, we shall have to be content with the present result. There is, however, one other matter in which economy might well be practiced. In looking over the Proceedings that have just come to hand, the writer is struck with the verbosity especially of two reports of committees. There seems to be no justification whatever why reports of committees should be made a means of self-glorification of their respective chairmen. Aside from the extravagance of printing a lot of matter that pertains but indirectly to the subject at hand, the members of our association are entitled to concise reports which they should like to and could read for the sake of information. It is presuming too much to think that the busy average member will wade through a lot of correspondence or pages of proceedings for a mere fragment of information. Besides such reports rather harm than benefit the cause for which the committee has been appointed, simply because most members will not read such reports, and therefore remain largely ignorant on subjects of great importance.

We all have read of "valuable time" and "money" spent in investigations and faithful research that extended over years, that was at last rewarded by the "great discovery" of a remedy for a specific disease or indeed, of a panacea for all human woes. Such is at least the version which the manufacturers of secret remedies present to the public at large, through the daily press and other forms of advertisements. But how different and comparatively simple is the version which was presented at the St. Louis meeting of the Proprietary Association of America. "The real fact," so says the author of an important petition, "is that they"—the formulas for the secret remedies namely,—"to a very large and almost universal extent, are the best and most successful prescriptions of our most advanced and most successful practitioners. The story is simple. The physician, and the more eminent he may be the more likely this result is to happen, sends his prescription to his druggist, who carefully prepares it and sends it to the patient; this is followed by others, and others, all made of the same ingredients and the same proportions, and they are largely or even eminently successful. The druggist is alive to this,—he knows from his own observation that he has in hand a cure for a certain definite form of disease, and gives it a name and launches it upon the public as a remedy for a certain form of disease."

To "launch" a cure on the public reads well indeed, but to justify such an act by claiming for it that it is merely the giving of "wings to a blessing for the people" sounds more like sarcasm coming from the pen of an "M. D.", as this does, than like honest conviction. "There is nothing of ignorance or mendacity or illiberality in the transaction" we are told. But in what medical college under heaven did Mr. Frederick Humphrey, M. D., study medical ethics when he lauds the "druggist"?—was he himself formerly such a druggist?—who "has only taken advantage of the opportunity which his trade offered him" in bestowing such a "blessing" upon the "poor" and "self-respecting" public. Why, these "regular physicians", these robbers of the poor, who withhold these "blessings" from a suffering mankind ought to be ostracized from Christian society. Surely we ought to repent in sack cloth and ashes for having favored "legitimate open medicine" and for having stigmatized secret remedies as an outgrowth of charlatanism, and quackery as a fraud.

It is but natural to see this paper* headed "Petition of the proprietors of and dealers in proprietary medicines," but that the head lines should specify not only the "wholesale" but also the "retail dealers of drugs of the United States," pains us. Pharmacists of the United States, is this statement true? We say no. It cannot be true, for the body of American druggists profess too much self-respect to become a party to such methods.

Along certain lines the Massachusetts Board of Pharmacy seems to be more thorough than any other board. Not only does the secretary give practically all of his time and attention to the duties of his office, but the board has an agent as well who serves in the capacity of inspector. During the year ending September 30, 1898, this agent has inspected 1595 drug stores. That such inspection had to be rather superficial and pertain principally or even exclusively to the personel and to the sale of liquors, becomes apparent from the number of inspections. We hope that in the near future the Massachusetts Board will also have the means of having the stock carefully inspected. The fact that of 51 druggists prosecuted 46 were convicted: that 41 drug stores had to be closed; that $3900.00 could be collected in fines, and 3 druggists so-called were committed to prison, seems to be sufficient reason for supposing that these persons who illegally assume the title of pharmacist may be willing to run the lesser risk of buying and selling fraudulent and adulterated drugs and medicinal preparations. Let us hope, therefore, that in the interests of the helpless sick the Massachusetts Board may soon extend the field of its great usefulness.

It is gratifying to learn that the Massachusetts Board is desirous of putting an end to a farcial feature of its examinations. Of 518 candidates examined during the past year, only 94 were registered and 424 were rejected. That the examination is not too rigid, no one who knows anything about state board examinations need be told. Should anyone doubt this assertion, his doubts will vanish if he reads some of the answers published in the Thirteenth annual report of the board. Of the 94 who were registered only 12 passed on the first examination, 19 on the second, 19 on the third and 17 on the fourth, etc., whereas 3 passed on the eleventh and 1 on the thirteenth examination. This is a farce, for even the most stupid

* See Pharm. Era, Oct. 27, p. 570.

cannot help passing after a dozen trials and we are glad to learn that the board is desirous of checking this nuisance. In fact, the board desires to take another step in advance by adding experimental work to its oral and written examinations, thus making them more thorough and practical. The board asks for an appropriation of $1000.00 to be obtained by a renewal of certificates once in two years, or by an increase of examination fees. It will be in the interest of the druggists of Massachusetts to demand reregistration at a nominal fee, for it will assist in keeping out unlawful competitors. It will likewise be in their interest to keep out ignorant competitors by making the examinations more thorough and by preventing unlimited reexamination by raising the examination fees.

Massachusetts has educational facilities unexcelled by any state of the union. One might expect that pharmacy had profited by the general high educational tone of that state. Yet this is by no means generally the case, for as we have already seen, several candidates had to try ten, eleven and even thirteen times before they could pass the simple examination of the state board. That the candidate is at fault and that the examination is not too difficult is shown by a number of answers printed in the report already referred to. Some of them are worthy of a wider circulation and are herewith reproduced:

"An applicant claiming nine years' experience, and upon his fourth examination, says: 'Krameria is Iceland Moss: chlorine is made from chloroform and alcohol: difference between carbonate and calcined magnesia is simply reducing carbonate to powder by rubbing: galenical preparations are fatty ones.'"

"An applicant, age twenty-seven, claiming five years' experience, says: 'I make lime water from chloride of lime, which comes from the metal calcium.'"

It would be of interest to know on what unfortunate mortals these persons practiced their "experience." If physicians should come to the conclusion that their rank and file is better qualified to dispense medicines, let them read the following:

"A physician of four years' experience as a druggist in an adjoining state says: 'Poke root is hellebore: squills is the bark of a root; don't know Cannabis Sativa, German Powder or how much arsenic in five minims of Fowlers Solution, or why cold water is used in making syrup of wild cherry: galls is the disease of a tree,' etc."

Another physician, fifty-three years of age, did not know the dose of laudanum and wanted to make pills of permanganate of potassium with "starch and some extract."

No doubt, these physicians after having failed to pass the pharmaceutical examination will continue to practice medicine. Ought it not to be the duty of the board to report such cases to the proper medical authorities? The public safety certainly demands that such ignorant persons be not allowed to practice medicine any more than pharmacy.

The Massachusetts board is to be commended in exposing sham and fraud as it does and we hope that other state boards will follow its good example.

New Tendencies in Pharmaceutical Science.*

Progress being largely relative, it is difficult to guage the advance made in pharmaceutical science or science in general during the past year. Not only is a comparison with future progress out of the question, but a comparison with previous years can be but very imperfect because we have not arrived at the necessary distance to obtain the proper perspective. A mere enumeration of achievements would scarcely prove satisfactory, especially if we remember to what extent the new results of the past year were made possible only by facts ascertained before. It may, therefore, be of greater advantage briefly to review some of the tendencies which were emphasized by the events of last year. Brief reports on the year's progress in several departments of pharmaceutical science will be made by specialists. The first of these will be found in this number and will shortly be followed by others.

With reference to degree of complexity, the general sciences may be arranged in the following order: physics, chemistry, biology. If chemistry be divided into inorganic and organic, the former division will stand next to physics, the latter next to biology. The newly discovered facts and laws in the realm of physics are in a general

* Continuation of retrospect from p. 6.

way first applied to inorganic chemistry, then to organic chemistry and finally to biology. In an address before the German Society of Naturalists at Duesseldorff, Van't Hoff last summer called attention to the new importance which inorganic chemistry has recently acquired by the application of physical methods. The popularly best known illustration to which attention may here be called is the discovery of several new elements. Careful determinations of specific gravity of atmospheric nitrogen have led Rayleigh and Ramsey to the discovery of argon; the use of the spectroscope led to the identification of helium, which had been known to exist only in the atmoshere of the sun, as a constituent of a mineral, also of the terrestrial atmosphere,[1] the study of the so-called Becquerel rays given off by pitchblende caused P. and S. Curie to discover polonium,[2] supposedly a new metal; the careful observation of the conductivity of heat of a certain or certain constituents of the atmosphere has led Brush to believe that he has isolated in the etherion an element different from those found by the English investigators.

A few years ago it seemed well nigh superfluous to offer a large prize for the best original contribution on the physical and chemical properties of the atmosphere. To-day we are almost bewildered by the number of new elements that have been found in what we supposed to be a comparatively simple mixture. Indeed the characteristic of the present stage of investigation of these new substances is that we do not know whether they are simple substances or mixtures of several elements.[3] The fact that the original argon soon after its discovery resolved itself into argon and krypton, and somewhat later was made to yield neon and metargon,[4] also since the opinion has been expressed that etherion, the new element or mixture of elements by Brush, may be nothing but aqueous vapor,[5] leads one to think that at present it is not very profitable to speculate with regard to the position of these "elements" in the periodic system or any other system of classification of the elements.[6]

The manipulation of gases like common liquids—as was demonstrated e. g. by Prof. Simon in his very interesting address at the

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[1] Chem. News, 78, p. 198.
[2] C. r. 127; also Chem. News 78, p. 49,
[3] Chem. News, 78, pp. 70 & 197.
[4] ibidem, p. 1.
[5] do., p. 221.
[6] See e. g. Chem. News 78, p. 25.

Baltimore meeting of the Am. Pharm. Assoc.—calls attention to another important application of mechanics and physics to the study of inorganic chemistry: the readiness with which gases are now liquified in large quantities. The shipment of two large tin cans of liquid air from New York to Baltimore on an extremely hot day may serve to illustrate in a striking manner what has been accomplished in this direction. The very thought of such a fact seems to create havoc with many of our former ideas about these subtle substances. These discoveries and accomplishments, however, are not remaining isolated, but are almost daily leading to new discoveries. In fact they have made comparatively easy the study of almost innumerable substances and reactions at low temperatures. How e. g. color will be changed by decided lowering of temperature as well as by a considerable increase, how reactions may not only be retarded but can be made to cease altogether has already been demonstrated. At the banquet of the Am. Chem. Soc. at Boston, Prof. Thompson alluded to the possibility of using liquid oxygen for metalurgical operations. Liquid nitrogen, to be separated from the liquid oxygen of the liquid air by fractional distillation, may thus be obtained as a cheap by-product and utilized as an ideal source of power. As for medical application, Turkish baths may soon have to compete with cold cure institutes. Several years ago it was demonstrated, to the satisfaction of some at least, that exposure to cold would create an appetite and facilitate digestion. Now it is intimated that such exposure will cure a variety of diseases, including even those of bacterial origin. From a period of skepticism we have rapidly passed to another in which few persons have the courage to deny the possibility of almost anything.

Less sensational, but by no means less important, has been the progress made in other departments of inorganic chemistry. The new theory of solutions is forging its way to the front more and more. It may not explain everything, but it has thrown much light on innumerable points which were in utter darkness before its advent. Here, indeed, organic chemistry seemed to supply for a time the simpler material. It was only after the exceptions from inorganic chemistry were formulated into a law, namely that of ionic dissociation, that this branch of chemistry again enjoyed the advantage of greater simplicity. For a time ions were the battle-cry of so-called physical chemists. To-day the non-dissociated mole-

cules[7] are again receiving more attention as well as the structure of the more complex ions.

It is with considerable satisfaction that American pharmacists can point to the first application of the theory of ionic dissociation to problems of pharmacy and medicine by investigators who were at the same time instructors at one of our university schools of pharmacy.[8] A mere beginning, however, has only been made. Pharmacists and physicians in general cannot as yet be said to have awakened to the importance of the application of modern physical and physico-chemical methods to the problems of pharmacy and medicine. Here and there a few have adapted themselves with more or less readiness to the new situation, but to many if not to most these new theories and hypotheses are Greek, because they are not heralded in the daily press and trade journals like the discovery of quasi new elements. That a recent convert to the theory of solutions should recommend that all of the members of the Scientific Section of the Am. Pharm. Assoc. should take a hand in new discoveries along these lines, shows that even he who had evidently read more or less voluminously, had not grasped the situation. In addition to the work merely alluded to above, other problems of interest have been solved or are being investigated.

Renewed attempts[9] are also being made to extract from fresh plants their active constituents in the form in which they preexist. A class of preparations known as dialysates are said to be the products of the application of physico-chemical methods to galenical pharmacy. Too little is known as yet of the results as well as of the details of the methods employed to pronounce the degree of success obtained. The systematic study of the toxic action of substances, with special reference to their structure, has been begun and has placed on a scientific basis much information that was but empiric.[10] Outside of pharmaceutical circles much other valuable work has been accomplished that cannot be enumerated. The few instances cited show that pharmacy is not only taking from the

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[7] Since this was written, Dr. Kahlenberg, Asst. Prof. of Physical Chemistry at the U. of W., has made the discovery that silver nitrate in organic solution, in which no or extremely little dissociation is supposed to take place, is a good conductor of electricity. This is not in harmony with the rather narrow ideas held by many physical chemists. A preliminary report will appear in the Jan. number of the Journal of Physical Chemistry published at Cornell University.

[8] Vol. 15 p. 68.

[9] Comp. J. U. Lloyd on plant dirt. vol. 11, p. 291.

[10] See Proc. A. Ph. A. 45, p. 252.

general sciences, but can also give and has given. Yet one need not be surprised if much work is done by pharmaceutical investigators according to the old methods, even where the theory of solution enables physical chemists to predict with a fair degree of accuracy just what may be expected.[11] Characteristic of the old empiric method of reasoning is the entire discussion of acetic acid extracts or acetracts that is going on at present. It may be of little consequence whether syrup of hydriodic acid several weeks or months after its preparation contains little or no cane sugar but its products of hydrolysis, due to the presence of the hydrogen ions of the hydriodic acid, but it is a matter of the greatest therapeutic import whether the extracts of alkaloidal drugs contain the natural alkaloids or their products of hydrolysis whenever such alkaloids are readily hydrolized. Yet this possibility seems to have been entirely overlooked thus far. Galenical pharmacy is sadly in need of reformation along physico-chemical and pharmacological lines. The importance of pharmacological examination of drugs rather than the old fashioned one of good looks where assay was impossible, was emphasized recently in an editorial in the Am. Journ. of Pharmacy.[12] In this latter particular, as in so many other instances, it is the progressive manufacturer who, cooperating with the scientist, is bringing about some of the necessary reforms.

The crudity of most of our knowledge of the constituents of fresh plants, of drugs or of galenical preparations obtained from either may be emphasized by calling attention to the change in the attitude of scientists toward iodine-containing animal drugs and preparations. Some decades ago when chemical analysis was supposed to have revealed that the "active constituent" of several animal drugs was iodine, the "progressive" chemist and therapist of those days had little use for iodine in any other form than potassium iodide. Iodine was iodine and it made little difference to him in which combination it existed. The simplest, the most convenient, was assumed to be the best. To-day it is the iodine in organic combination, as similar to that which is found in the animal organism as possible, which is sought for. That the complex ion containing iodine will have a different effect from the simple iodine ion is now generally conceded. It is explained on a similar basis as the difference between the (C-N) ion

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[11] See p. 10.
[12] Vol. 71, p. 41.

and the complex ion of ferrocyanic acid is explained, or the difference in antiseptic properties between the simple powerful Hg-ion and the week complex Hg-albuminous-ion is explained in accordance with the theory of ionic dissociation.

Galenical pharmacy has benefited much in the last decade or two by the enormous progress made in organic chemistry. It is just beginning to realize that it must also take into consideration physical chemistry, pharmacology and bacteriology. To hold up our hands in holy horror at the idea that changes can take place in drugs at ordinary temperature as was done by an officer of the Scientific Section at the Chicago meeting, and to be willing to throw everything overboard if we cannot feel "safe" against changes under the conditions common in the manufacture of galenical preparations, reveals not only ignorance of the present status of science, but also of its future possibilities. How much light can be thrown upon such changes, where no changes were supposed to take place by many, was beautifully demonstrated by Aweng[13] in his paper on frangula bark before last summer's meeting of Swiss Naturalists.

Galenical pharmacy like operative pharmacy, if conscientiously practiced, is not becoming more simple as so frequently assumed by many, but more complex. From an empiric basis it is being raised to the standard of a science exceedingly complex in its manifold bearings. The renewed attention that is being given to galenical pharmacy as well as to vegetable pharmacognosy by competent scientists is one of the signs of the times. Organic and physical chemistry, bacteriology, and pharmacology in the more restricted sense, have made enormous strides in recent decades and the fruits of many laborers in these departments are becoming applicable to the study of vegetable drugs and their preparations. A new, prosperous era will open up for pharmaceutical science if pharmacy is in a position not only to receive from the more general sciences as a parasite derives its nourishment from the host plant; but if it is ready to give as well, to contribute freely to science, and thus evince the healthy life of an essentially independant organism.

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[13] See p. 76; or Schweiz. Wochensch. f. Chem. u. Pharm. 46, p. 445.

Work on Powdered Drugs, including Subjects related thereto, for the Year 1898.

By *Henry Kraemer.*

In attempting to write a brief review of the important work on powdered drugs for the year 1898, we are confronted with the problem—shall we mention only those investigations which have been made on drugs in the powdered condition, or shall we consider the work which has been done by different investigators in various ways on vegetable drugs and which is essential and very easily applied and utilized by the expert in the study of powdered drugs? We prefer to look upon the work for the year 1898 in this rather broad manner as it is necessary and desirable from both the practical and the scientific standpoint. The work accomplished during the year may be most conveniently considered under a number of subdivisions.

I. New Drugs that have been described.

The work on the medicinal plants of that most interesting region, Brazil, has been continued by Theodor Peckolt in the Pharmaceutical Archives[1] and Ber. Deutsch. Pharm. Ges.[2] This is to American pharmacognosists one of the most important contributions that is being made, inasmuch as there are thousands of specimens in different institutions of the United States to which are attached labels bearing nothing more than the common vernacular names of these drugs. F. Moeller[3] has contributed material information as to the medicinal plants of Western Africa; Gürke and Volkens[4] have described a number of barks and woods which have come from Eastern Africa; G. Volkens[5] has considered a large number of useful plants from the same region and A. Engler[6] has described several useful woods and given the results of experiments in cultivating various plants in German East Africa. The Chinese wood oil tree has been considered by A. Henry.[7] Two new fibre plants, one (*Laportea canadensis*) from North America and one from Russia (*Apocynum venetum* L.) are described

[1] Pharm. Archives, 1898, No 1, etc.
[2] Ber. d. Deutsch. Pharm. Ges., 1898, Nos. 2 and 5.
[3] Ber. d. Deutsch. Pharm. Ges., 1898, Nos. 3 and 6.
[4] Notizbl. bot. Gart. u. Mus. zu Berlin, 1898, No. 11.
[5] Notizbl. bot. Gart. u. Mus. zu Berlin, 1898, No. 11.
[6] Notizbl. bot. Gart. u. Mus. zu Berlin, 1898, No. 2.
[7] Am. Drug. and Pharm. Rec., 1898, No. 3.
Pharm. Review, 1898, p. 196.

in Kew Bulletin,[8] as also the nutriment yielding plants of the Zulus of Ubombo.[9] A new colocynth yie'ding plant (*Sappa purgans*) has been sent from Bahia, South America, to London.[10] Thomas[11] has further investigated "Taroschnitte", the product of *Colocasia antiquorum*. Paul and Cownley[12] describe two plants which are used for medicinal purposes in the Windward Islands. A further contribution to the Soy bean has been made by Fesca.[13] D. Hooper[14] describes the bark of *Cleistanthus collinus*, of India, which is used as a fish poison. Some Chinese drugs are mentioned in Kew Bulletin.[15] E. H. Gane[16] has examined the bark of *Entada scandens* ("Gogo"). Volkens[17] gives the results of experiments on the cultivation of economical plants in Victoria. "Indian Bread root", the product of *Zamia integrifolia*, has been examined by A. T. Cuzner.[18] *Strychnos lanceolaris*, which yields the arrow poison "Blay Hitam", has been carefully examined by Elfstrand.[19] Schär[20] has more carefully studied *Fouquiera splendens*, the plant which yields ocotilla wax. Some newly introduced drugs are considered by P. Siedler[21] and in the Chem. and Drug.[22] some uncommon drugs, which find their way to the London markets, are described. F. Möller[23] considers some of the caoutchouc yielding plants of Angola. The plants yielding arrow poisons in Malacca have been studied by Hartwich.[24] Möller[25] has been continuing his studies on the woods yielding and related to the lignaloe wood. A false sarsaparilla from the Amazon, free from calcium oxalate and starch, is mentioned by Hartwich.[26]

Schär[26a] has extended the work of Greshoff on the enumeration of phanerogamic medicinal plants which are employed as fish poisons, and J. F. Pool[27] has contributed a paper on "Nekoe", a fish poison

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8 Kew Bulletin, 1898. No. 133, p. 134; and No. 140.
9 Kew Bulletin, 1898, No. 135.
10 Chem. and Drug., 1898, No. 963.
11 Tropenpflanzer, 1898, No. 8.
12 Pharm. Jour., 1898, No. 1464.
13 Tropenpflanzer, 1898. No. 8.
14 Pharm. Jour., 1898, No. 1465.
15 Kew Bulletin, 1898, No. 138.
16 Proc. Am. Pharm. Assoc., 1898, p. 343; Ph. Rev. 16, p. 386.
17 Notizbl. Kgl. Bot. Garten. Be'lin, 1898, No. 14.
18 Jour. Amer. Med. Assoc., 1898, Feb. 12.
19 Arch. d. Pharm., 1898, No. 2.
20 Arch. d. Pharm., 1898, No. 1.
21 Ber. d. Deutsch. Pharm. Ges., 1898, No. 1.
22 Chem. and Drug., 1898, No. 932.
23 Tropenpflanzer, 1898, No. 3.
24 Schweiz. Wochenschr. f. Chem. u. Pharm., 1898, No. 37; Ph. Rev. 1899, p. 17.
25 Pharm. Post, 1898.
26 Pharm. Zeit., 1898, p. 684
26a Apothekerversammlung Strassburg, 1897; Apoth. Zeit., 1898, p. 158.
27 Nederl. Tijdschr. voor Pharm., Chem. u. Pharmacol., Jan. 1898; Pharm. Rev. 1898, p. 148.

of Surinam. being the wood of *Loncocarpus violaceus* Bth. A contribution on the incense trees of the West Indies has been made in Kew Bulletin (1898. No. 141). The exudations from several plants of the Congo have been examined by Hébert (Apot. Zeit., 1898, p. 170).

E. M. Holmes[44] describes the products and origin of the species of Capsicum yielding Japanese Cayenne Pepper and a new substitute for tea, coffee, etc. in the leaves of *Eupatorium triplinerve* Vahl—better known as *E. ayapana* or "Ayapana".

II. More Detailed Study on Drugs already known.

A histological comparison of the structure of Veratrum album and Veratrum viride has been made by R. H. Denniston.[28] The same author[29] has examined the twigs of *Fraxinus Americana* L. and made some investigations[30] on Indian and Alexandrian Sennas. His results on this latter drug more nearly coincide with those of Schneider. R. H. Denniston[31] has also made a comparative study of the barks of certain American Viburnums—viz. *V. prunifolium* L., *V. opulus* L., *V. lentago* L., *V. dentatum* L., *V. nudum* L., *V. cassinoides* L. and *V. lantanoides* Michx. Hartwich[32] describes the structure of the seeds of a plant, grown during the stone age in Switzerland, near *Papaver setigerum* DC. Preston[33] has made a histological study of the various parts of a species of Commelina. Gelsemium has been investigated by Jos. D. Seiberling[34] and some new facts brought to light. Frank W. Morgan[35] contributes an illustrated article on the structure of Gossypium Radicis Cortex. The leaves of *Rhus coriaria* are distinguished by Perkin and Wood[36] from various other leaves with which they are adulterated, by a microscopical examination. Tuthill[37] has examined the seeds of various species of Strophanthus. A most important contribution to our knowledge of Cubeb yielded by species of Piper, as well as products not of the Piperaceæ, has been furnished by Hartwich.[38] Planchon[39] has contributed some information on the seeds of *Cola cordifolia*, which appear not to contain either caffeine, theobromine or kolanine. Another study on "Ipecacuanha striata",

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[28] Pharm. Archives, 1898, p. 68; Pharm. Rev. 1898, p. 150.
[29] Pharm. Archives, 1898, p. 6; Pharm. Rev. 1898, p. 70.
[30] Pharm. Review, 1898, p. 105.
[31] Pharm. Archives, 1898. p. 137; Pharm. Review, 1898, p. 388.
[32] Apoth. Zeit., 1898, p. 669.
[33] Am. Jour. Pharm., 1898, p. 321.
[34] Am. Jour. Pharm., 1898, p. 378; Pharm. Rev. 1898, p. 346.
[35] Am. Jour. Pharm., 1898, p. 427.
[36] Kew Bulletin. 1898, No. 140.
[37] Pharm. Era, 1898, No. 7.
[38] Arch. d. Pharm., 1898, Heft 3.
[39] L'Union pharmaceutique, 1898, No. 4.

yielded by *Psychotria emetica* Mutis has been made by Dethan.[40] A further pharmacognostical study of Guarana has been made by E. Kirnisse.[41] The black pepper of Mangalore has been thoroughly studied by T. F. Hanausek[42], while Bourdin[43] has made a comparative study of the leaves of noteworthy poisonous *Umbelliferæ*. The genus capsicum has, from a taxonomic as well as economical standpoint, been worked over by various investigators.[44] W. Keller[45] has published a monograph on the fruit of *Humulus lupulus*. A further contribution to the different species of Ilex, furnishing the Maté of commerce, has been furnished by Polenske and Busse.[46] The plant yielding Corarima-Cardamon of British Central-Africa, (*Amomum angustifolium* Sonnerat) has been further described by Mahon.[47] A morphological study of the species of *Anhalonium* yielding "Mescal" has been made by Thompson.[48] *Hura crepitans* has been further studied by J. F. Pool (Pharm. Weekblad, 1898, No. 34). An important study on the Mosses found on Cascara bark has been made by E. M. Holmes.[49] The importance of this latter work will be more manifest when practical pharmacognosy shall see in the study of fungi, lichens and mosses upon various drugs means of differentiating valuable drugs.

III. Microchemical Tests.

Early in the year Rodney H. True[50] published a key for identifying the commoner plant substances for ready use in the laboratory. An important contribution on the character of the mucilaginous substance in Gentian has been made by Bourquelot and Herissey[51] and Henry Kraemer[52] has furnished a brief monograph on the origin and detection of mucilage in the vegetable kingdom. R. Bierman[53] has studied the development of the oil cells in *Cannabis Indica*. A sample of black wax has been shown by G. H. Blitsteil[54] to

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40 Jour. Pharm. Chim., 1898, No. 8.
41 Arch. d. Pharm., 1898, Heft 2.
42 Zeitsch. f. Unters. d. Nahr. u. Genuss., 1998, p. 153.
43 Bull. de Pharm. de Sud-Est, 1897, No. 5.
44 Kew Bulletin, 1898, No. 139.
Pharm. Jour., 1897, No. 1431 and 1433.
Missouri Bot. Gard., Ninth Annual Report; Pharm. Rev. 1898, p. 350.
Chem. and Drug., 1898, No. 930.
45 Chem. Zeit., 1898, No. 11.
46 Arb. Kais. Gesundheitsamt, 1898, p. 171; Apoth. Zeit., 1898, p. 870.
47 Kew Bulletin, 1898, No. 142.
48 Report Missouri Bot. Gard., Ninth Annual Report.
49 Chem. and Drug., 1898, No. 932.
50 Pharm. Review, 1898, p. 9.
51 Jour. Pharm. Chim., 1898, p. 8.
52 Am. Jour. Pharm., 1898; Pharm. Rev. 1898, p. 272.
53 Arch. d. Pharm., 1898, Heft 1
54 Nederl. Tijdschr. voor Pharm., Chemie en Toxikolog,, Feb., 1898; Apoth. Zeit., 1898, p. 284.

consist very largely of pollen grains which carry the color. An important chemical study on commercial aloes has been made by G. Pedersen,[55] and the results are deserving of a microscopical application, to some extent at least. The same may be said of the investigations of Tschirch and Farner[56] on shellac; and the studies on secretions carried on by the students of Tschirch, as Halberg[57] on olibanum, and the active principles of frangula, rheum and senna, studied by Aweng.[58] Henry Kraemer has called attention again to the sulphuric acid test in distinguishing genuine crocus (Proc. Penn. Pharm. Assoc., 1898).

IV. Distribution and Localization of Active Principles.

Ed. Schär[59] contributes an important paper along the lines of the above title. He considers the ascertaining of the distribution of certain chemical compounds in different plants as one of the most interesting problems of the newer pharmacognosy. The importance of this study to the botanist, chemist and apothecary is of more than ordinary importance. Schär mentions the distribution of tannin, saponin, hydrocyanic acid, cholesterin, oxidation ferments, etc. To these may be added the distribution of methyl salicylate in the vegetable kingdom, upon which a number of contributions[60] have been made; and hydrocyanic acid.[60a] The latter principle has not been found by Richard Fischer in *Mitchella repens*[60b] when gathered in the fall.

The form and combination in which the alkaloids, glucosides, etc. occur in the plant is wholly a matter of conjecture. Schär believes that these principles are contained in combinations of a rather complicated molecular structure. It is not unlikely that these combinations are quite unstable and easily broken up in those plants where we find a large number of active principles.

The localization of the active principles whether in the cell wall or cell contents is an extremely difficult one unless similar tests to those proposed for mucilage[52] and tannin[53] can be discovered. Schär calls attention to the fact that one author observes that the alkaloids of nux vomica are in the cell contents of the endosperm, whereas

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55 Arch. d. Pharm., 1898, Heft 3.
56 Schweiz. Wochenschr. f. Chem. u. Pharm., 1898, No. 40.
57 Arch. d. Pharm., 1898, Heft 7.
58 Schweiz. Wochenschr. f. Chem. und Pharm., 1898, No. 40.
59 Zeitschr. f. Unters. d. Nahr.- u. Genussm., 1898, p. 297; Apoth. Zeit., 1898, p. 340.
60 Pharm. Review, 1898, pp. 100 and 176; Amer. Jour. Pharm., 1898, p. 412.
60a Pharm. Review, 1898, p. 98; Nederl. Tijdschr. voor Pharm., 1898, p. 1.
60b Pharm. Review, 1898, p. 98.

another reports them in the cell walls. This same failure to confirm each others results is apparent in other cases. In this connection the problem also arises: are certain crystals, which occur in the examination of plants, due to the action of reagents or are they naturally "pre-formed" in the plant? Our methods of procedure must be modified to some extent to ascertain these facts with certainty, although the discoveries which have been made serve in some measure to enlighten us in the valuation of crude and powdered drugs.

H. P. Wijsman[61] has shown that the alkaloids nicotine and berberine are contained in the cell contents and furthermore that they are not in the protoplasm, but in the vacuoles of the cell. Barth[62] has proceeded a step further in that he finds that while the alkaloids are the products of the cell contents, that they arise in the protoplasm and later are transferred to the cell sap (vacuoles) where they form salts with the acids. The author also concludes that the alkaloids in seeds and fruits represent not decomposition products of the albumin, but rather not fully developed albumin.

A very interesting communication has been furnished by Gerber[63] in which he finds that in the ripening of fruits the tannin is oxidized without forming carbohydrates, while the starch is changed to forms of sugar and later decreases in amount by reason of oxidation changes. Elfstrand[19] has found that all tissues of wood and bark of *Strychnos lanceolaris* give reactions for brucin. Emulsin was found in a number of lichens by Hérissey (Jour. Pharm. Chim., 1898, p. 577), and a contribution on the characteristic constituents of lichens was furnished by O. Hesse (Jour. f. prakt. Chem., 1898, Band 57).

The estimation of the amount of ash contained in various plants and their parts is one of the most important considerations which concern all those who utilize the plant products in any way. The percentage of ash is dependent upon a great many factors, viz.: character of soil, climate, period of growth of plant, etc., all of which must be considered in the application of the results of analysis. What is even of greater importance is the character of the ash. The presence of calcium as carbonate or oxalate; the presence of certain constituents as chrysophanic acid, etc., all of this information has an important bearing on the examination of powdered drugs and can

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61 Apoth.-Zeit., 1898, p. 669.
62 Arch. d. Pharm., 1898, Heft 5.
63 Ann. de Sc. Nat. Bot., Vol. IV., p. 1.

be utilized immediately by the investigators in this line. G. Thoms[64] has shown that the seeds of *Trapa natans* when gathered in August contain but 1 p. c. of iron oxide, whereas seeds which lie a year in the water contain 68 p. c. This is due to the fact that in the dead tissues of older seeds a tannate of iron is formed similar to that which is found in oak wood subjected to similar conditions.

A most important contribution to the estimation of the ash in drugs has been made by J. Hockauf.[65] In addition to the percentage calculations the author observes that the forms of certain tissues and compounds are preserved as characteristic skeletons which may be examined microscopically after incineration of the drug. Dieterich[66] has examined the ash of the fine and coarse particles in a large number of powdered drugs and finds that the ash increases with the fineness of the powder, whereas the amount of the potassium carbonate is greatest in the coarse particles. If this work had been carried on differently, it might have been of some scientific value; but even as it is, it is possible that some practical applications may be made. D. B. Dott (Pharm. Jour., 1898, p. 282) has made some observations on the determination of ash as an analytical method, from which it is very apparent that the determination of ash alone is no criterion of the purity of a powdered drug.

V. Advances in Pharmacopœia Requirements.

During the year 1898 a new edition of the British Pharmacopœia has been published and we find that there has been introduced in some cases, as in capsicum, caraway and cloves, an ash limit. No mention is made of any other characteristic for distinguishing an adulterated powder of these drugs. This is all the more remarkable inasmuch as certain histological characters are incorporated here and there among of some of the drugs, as in aconite root, belladonna root, calumba, cascarilla, coca, cubeb, cusparia bark, gentian, glycyrrhiza, hamamelis bark, hemidesmus root, hydrastis, hyoscyamus leaves, ipecac, jalap, lobelia, mezereum, prunus virginiana, pyrethrum, quassia, sarsaparilla, senna, stramonium leaves, sumbul, etc. But as some one has said "these descriptions are so meagre and while quite true as far as they go, leave so much unsaid as to be comparatively valueless." In one case (strophanthus)

[64] Landw. Versuchs-Stat., XLIX., p. 165: Apoth.-Zeit., 1898, p. 313.
[65] Nederl. Tijdschr. voor Pharm., Chem. en Toxicol., Jan., 1898; also Zeitschr. d. allg. Oesterr. Apoth.-Ver., 1898, pp. 1, etc.: Pharm. Rev., 1898, pp. 153 & 428.
[66] Pharm. Ztg. 1898: Pharm. Rev. 17, p. 26.

a microchemical test is directed and under starch a fair microscopical description of some of the starches is given. It is possible that the Committee of Revision was opposed to the introduction of any histological characters in the new Pharmacopœia and that those incorporated were with difficulty put in and that they who comprehended the value of the characteristic tissues and contents in the study of both powdered and crude drugs were willing to accept what we find here rather than nothing. But inasmuch as so little original work is being done in Great Britain on the histological study of crude and powdered drugs, we are inclined to think that the opportunity for making a useful addition in conformity with the advances and tried results of recent years was neglected, owing to a lack of appreciation of the importance of the subject. It is to be hoped that the Committee of Revision of the United States Pharmacopœia, having this part of the work in charge, will profit by this omission on the part of the Committee of the British Pharmacopœia and either omit the subject entirely or give it more uniform consideration and make it of some practical value.

VI. Examination of Powdered Drugs.

That no more argument is necessary to indicate the value of the microscope in pharmacy is attested by the fact that scarcely a paper on this subject has been published during the past year. On the other hand almost all of the pharmaceutical journals have devoted considerable space to the consideration of either original articles or abstracts or both on the study of powdered drugs. The Pharmaceutical Journal, for instance, has more than once alluded to the importance of this subject and encouraged these studies by the consideration of elementary work on "Practical Pharmacography". The Druggists' Circular, Merck's Market Report and other journals have published numerous illustrated contributions along the same lines. All of this work indicates the necessity, from a practical standpoint, that is felt on this subject and indicates "the signs of the times." Some of these contributions, while they have added nothing new to the subject and not been as well executed as they might have been, still have added certain personal observations which are of value if true to nature, well calculated and properly interpreted.

A large amount of the work, referred to under "More Detailed Study on Drugs Already Known," has been undertaken with the object of

throwing light on the examination of these drugs in their powdered condition, so the references already given under subdivision II. ought to be taken in this connection. We find further that J. U. Lloyd[67] has given a test for distinguishing the limit of starch which may be present in white and black mustard. An interesting investigation on the coloration and length of duration of color with an iodin solution and chocolate of different origin and that admixed with various starch containing products has been made by G. Possetto.[68] Hartwich[69] has determined a false Sarsaparilla, the structure of which resembles *Herreria Salsaparilla* Mart., but the drug is free from starch or calcium oxalate crystals and therefore easily determined. Coffee has been adulterated with sugar[70] and sago flour.[71] Cassada or Manihot Starch from Togo has been examined by Thoms.[72] Some interesting studies on flour and its adulteration have been made by A. Lam[73] and G. A. Le Roy.[74] It is worthy of note that a large firm calls attention to the fact that the opium[75] from Asia Minor and Persia has recently come to contain considerable quantities of starch. L. E. Sayre[76] has examined the powder of *Rheum officinale* and *R. rhaponticum*. S. E. Jelliffe[77] has made some studies on powdered rhubarb and senna. The same author has made some observations[78] on powdered ipecac and belladonna. H. H. Rusby[79] has called attention to the problems on powdered drugs suggested for investigation by the Subcommittee of the United States Pharmacopœia, of which he is chairman. J. M. Francis[80] acknowledging that while insect powder is more toxic in its action the larger the proportion of flowers it contains, claims that a powder consisting of ⅓ to ½ stems accomplishes the desired work quite as well from a practical point of view. Caesar and Loretz[81] have called attention to the fact that there are certain insect powders in the market, which contain powdered quillaja bark and euphorbium besides artificial coloring

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67 Am. Pharm. Assoc. Proc., 1898; Pharm. Rev. 16, p. 328.
68 Giornale di Farmacia di Chemica etc., 15.
69 Schweiz. Wochenschr. f. Chem, u. Pharm., 1898, No. 37.
70 Brit. and Col. Drug., 1898, p. 739.
71 Zeitschr. f. Unters. d. Nahr.- und Genussm., 1898, p. 248.
72 Tropenpflanzer II., 1898, No. 9.
73 Chem. Zeit , 1898, p. 309.
74 Compt. rend. 1898, p. 1017.
75 Pharm. Zeit., 1898, p. 122; Pharm. Review, 1898, p. 195.
76 Am. Jour. Pharm., 1898, p. 196; Pharm. Review, 1898, p. 196.
77 Druggists Circular, 1898, p. 7; Pharm. Review, 1898, p. 117.
78 Druggists Circular, Dec. 1898.
79 Proc. N. Y. State Pharm. Assoc., 1898.
80 Bull. Pharmacy, 1898, p. 5.
81 Pharm. Centralh., 1898, p. 702.

matter. A sample of powdered pimento was examined by Hanausek[82] and found to contain washed cacao husks. J. W. Woolsey[83] examined some powdered gamboge which contained about 50 percent starch. Saffron has been examined by J. Wanters,[84] Rodney H. True[85] and Henry Kraemer.[86] G. A. Le Roy[87] has employed an alcoholic solution of phloroglucin strongly acidified with phosphoric acid for determining the presence of sawdust in adulterated starches. Jaworowsky[88] gives a delicate analytical m thod for determining turmeric in rhubarb. Van Bastellar[89] mentions the employment of 16 reagents in the microscopical examination of foods.

A. Hebebrand[90] suggests the following modification of the method of preparing microscopical specimens of vegetable substances: Mix a large bulk of the substance, powder a small part finely, and again take a small portion of this and powder it finer still, rub through a ⅓ mm. sieve. Mix a small amount of the powder with about 10 to 15 cc. of 7 percent sodium carbonate solution and pass chlorine gas through the mixture for from 2 to 10 minutes, during which time the solution must remain alkaline, then dilute with water. The bleached tissues are allowed to settle and are ready for microscopic examination.

A scheme for the qualitative determination of about 300 powdered drugs and foods has been published by Henry Kraemer[91] and has been referred to in abstract in the Review. In this paper are mentioned the characteristic cell contents and tissues which together with the measurements given of the same will be found useful to the practical pharmacognosist.

VII. Quantitative Examination of Powdered Drugs.

During the past year the principle for the quantitative examination of Powdered Vegetable Drugs published by Henry Kraemer in Proc. A. Ph. A., 1895 and 1897, has been employed by several other investigators. S. Weinwurm[92] has utilized it in detecting adulterated starch. He heats 2 gms. of the powder with 200 cc. of water at a

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82 Zeitschr. f. Unters. d. Nahr.- und Genussm., 1898, p. 345.
83 Am. Jour. Pharm., 1898, p. 446.
84 Bull. de l'Assoc. Belge des Chem., 1898, p. 103.
85 Pharm. Review, 1898, p. 258.
86 Am. Jour. Pharm., 1898, p. 386; Pharm. Rev., 1898, p. 347.
87 Bull. de la Soc. Chem. de Paris, 1898, p. 478.
88 Zeitschr. d. Oest. Allg. Apoth.-Ver., 1898, p. 727.
89 Jour. Pharm. Chim., 1898, p. 228.
90 Forsch. Ber. 1897, p. 308; Pharm. Jour., 1898, p. 592.
91 Proc. Am. Pharm. Assoc., 1898; Pharm. Rev., 1898, p. 463.
92 Zeitschr. f. Unters. der. Nahr. u. Genussm., 1898, p. 98.

temperature of 62.5—63° C. for an hour. 5 drops of the mixture are taken and as many mounts made and the swollen starch grains in 20 different places in each are counted. E. E. Ewell[93] has employed a similar method to that employed by Kraemer in detecting the adulteration of wheat flour with maize products.

Taking a calm retrospect of the work on powdered drugs for the year 1898, it is apparent from this broad consideration of the subject that much has been accomplished. More results are at our command than the average pharmacist is trained to appreciate or apply. There are very many facts on the distribution and structure as well as constituents of our drugs which can be utilized immediately in the study of powdered drugs. The work on this subject has only been begun and it may be said that so quickly as the sciences of botany and chemistry advance, the science of pharmacognosy will develop and practical pharmacognosy will find its wants supplied. It must be said, however, that the greatest of all difficulties in the advancement of practical pharmacognosy is, that those who can most be served by the science of pharmacognosy do not realize that a training, commensurate with any of the other sciences, must be secured by those who are called upon to do more than imitate and of whom it is required that the practical questions presented for solution must be answered.

MONTHLY REVIEW.

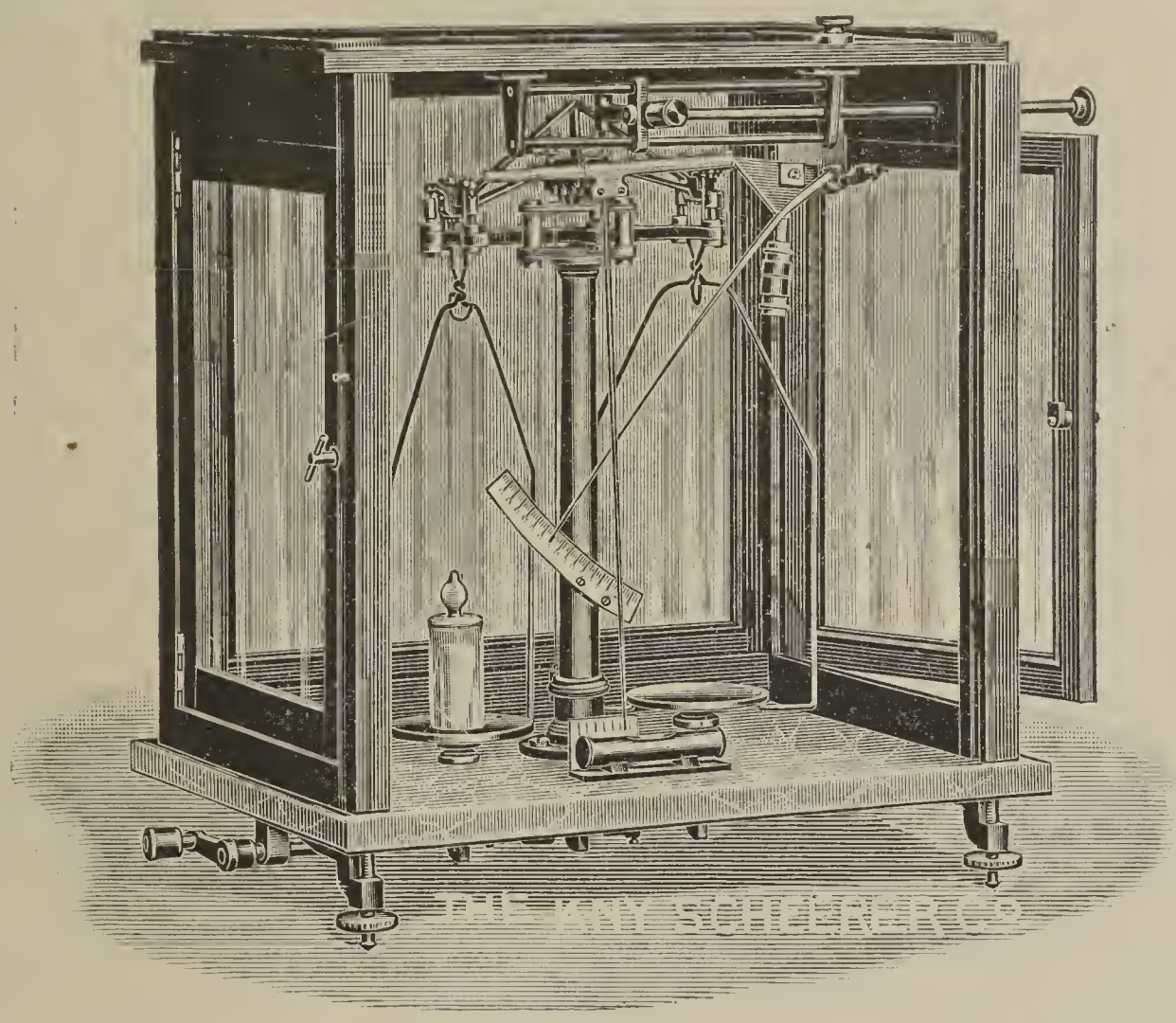
Pharmaceutical Technique.

A New Chemical Balance.*—R. Hase reports on a new chemical balance which has an arrangement for rapidly determining the approximate weight of the body to be weighed. This arrangement consists of a system of levers which can be put into use by turning the knob on the top of the case. This lever system bears on the hangings and beam of the balance and when the balance beam is released, a pointer on the lever system indicates on a scale the weight of the body within a centigram or two. The weights indicated on the scale are then put upon the right hand pan, the pointer on the scale always indicating the amounts of weight yet to be added. The lever system is then turned aside by means of the knob on the top of the case and the

[93] Jour. of Applied Microscopy, 1898, p. 122.

* The accompanying cut was obtained through the kindness of the Kny Scherer Co. of New York.

finer weighings made as with an ordinary balance. With a little practice the weighings can be so made that after putting on the weights indicated by the lever, it will be only necessary to use the rider arrangement. The balance is particularly useful for weighing out definite amounts of material. The substance can be weighed out without checking the balance while making each addition, as is necessary with the ordinary balance, and can be added until the pointer on the scale indicates the desired amount. In view of the



fact that an ordinary analytical balance must be checked a great many times while making a weighing, it is evident that the balance is greatly saved from wear by this arrangement and the time saved in making a weighing is certainly a decided advantage.

[Zeitsch. f. angew. Chem., 1898, p. 736.] *Oswald Schreiner.*

Chemistry.

Medicinal Lithium Carbonate. — Lyman F. Kebler discusses the pharmacopœial description and tests of purity of lithium carbonate, reports an examination of eight specimens and suggests some modifications of the pharmacopœial requirements.

While slight impurities, their nature depending upon the process of manufacture, were found in all cases, yet on the whole their quality was fairly

good. Volumetric estimations gave the following percentages of lithium carbonate: 96.20, 98.42, 98.79, 99.50, 99.16, 99.13, 98.64, 97.50. Gravimetric determinations (method not given) of five samples were also made and are as follows, representing in the same sequence the first five specimens quoted before: 98.63, 97.70, 100.00, 97.77, 97.77.

While at present the solubility is given as "soluble in 80 parts at 15° C." it is suggested to read "soluble in not less than 75 parts, and should not require more than 80 parts at 15° C." The tests for chlorides, sulphates and for iron, manganesse, etc. are changed so as to permit slight impurities. The volumetric estimation is changed so as to require a purity of 98.61 percent of pure salt, instead of 98.98 percent as now.

[Am. J. Phar. 70, p. 600.] *W. A. P.*

Preparation of Pure Silver.—Otto Kuhn proposed a method to obtain pure silver which will also prove a convenient way to recover silver from silver chlorid obtained in analytical operations. Silver chlorid, obtained in the usual way and washed most thoroughly, is, while still moist, transferred to a platinum dish. The precipitate should not quite fill the vessel. The platinum dish is placed in one of porcelain and water carefully poured in until the platinum vessel is completely covered by the water. The water in both vessels is now rendered acid with a few drops of pure sulphuric acid, a few pieces of zinc placed in the porcelain vessel so that they are in contact with the platinum. The reduction of silver chloride begins at once and is complete in 24 to 48 hours. The end of the reaction is shown by the formation of bubbles of gas at the silver. The spongy silver is purified by boiling with very dilute sulphuric acid and then washing very thoroughly with cold water. [Chem. Ztg. 22, p. 868.] *W. A. P.*

Tannoid-Reactions.—The so-called general reagents for tannin: gelatin, albumen, alcaloids, tartar emetic and ferric chloride, were first applied to the tannin of nut-galls, resp. oak bark. In order to ascertain their true value as general reagents, Kunz-Krause points to the necessity of applying them to all substances which are considered to be derived from two or more molecules of gallic acid by splitting off one or more molecules of water. These substances are: gallic acid, $C_7H_6O_5$; α-digallic acid of Schiff, $C_{14}H_{10}O_9$; β-digallic acid of Boettinger, $C_{14}H_{10}O_8+2H_2O$: ellagen tannic acid and ellagic acid, both $C_{14}H_{10}O_{10}$; hamamelitannin, $C_{14}H_{14}O_9$: chebulinic acid, $C_{28}H_{24}O_{19}$: tannin, $C_{56}H_{46}O_{37}$ (?); trigallic acid of Gautier, $C_{21}H_{14}O_{13}$.

A table of the reactions which these tannoids yield with various reagents is given. The author comes to the conclusion that gelatin, albumen, alcaloids and tartar emetic are specific group reagents for the anhydride tannoids which result from two or more molecules of protocatechuic acid, resp. gallic acid by splitting off of water, i. e. for the two natural groups: 1. protocatechuic-anhydride-tannoids, and 2. gallo-anhydride-tannoids.

Of these reagents gelatin most frequently also precipitates other tannoids: albumen, alcaloids and tartar emetic only in individual cases. In the case of the alcaloids the precipitation does not only depend upon the nature of the tannoid, but on the constitution of the alcaloid as well.

[Schw. Wochenschr. f. Ch. & Pharm. 36, p. 424.] *E. K.*

A Natural System of the Tannoids. — The following system, which is largely self-explanatory, has been proposed by Kunz-Krause.

I. Non-glucosidal compounds.

I. Group: Tannogens (of Braemer).

1. Subgroup:
Dioxy acids.

a) of the benzene series:
α) Protocatechuic acid

C_6H_3(—OH 4, —OH 3, —COOH 1)

b) of the styrene series:
α) dioxycinnamic acid (caffeic acid)

C_6H_3(—OH 4, —OH 3, —CH:CHCOOH 1)

2. Subgroup:
Trioxy acids.

a) of the benzene series:
α) Gallic acid

C_6H_2(—OH 5, —OH 4, —OH 3, —COOH 1)

b) of the stryene series:

II. Group: Tannoids (non-glucosidal).

1. Subgroup:
Protocatechu tannoids.

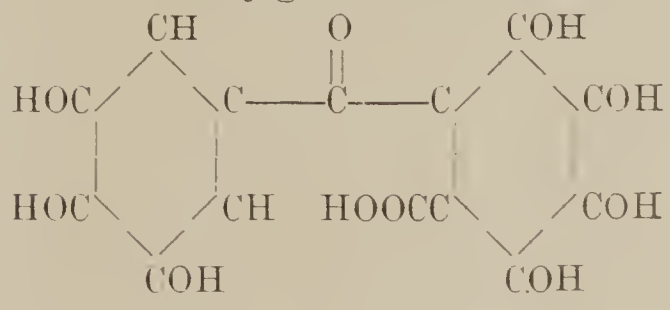
A. Protocatechu-anhydride tannoids (anhydrides of the corresponding tannogens).
a) of the benzene series:
α) Diprotocatechuic acid: $C_{14}H_{10}O_7 : 2C_7H_6O_4 - H_2O = C_{14}H_{10}O_7$. According to the law of Tiemann and Parrisius, it is colored green with ferric chloride.
b) of the stryene series:
Unknown.

B. Protocatechu-ketotannoids.
a) of the benzene series:
Unknown.

2. Subgroup:
Gallotannoids.

A. Gallo-anhydride tannoids (anhydrides of the corresponding tannogens).
a) of the benzene series:
α) Digallic acid: α-) $C_{14}H_{10}O_9$
β-) $C_{14}H_{10}O_9 + 2H_2O$
β) Trigallic acid: $C_{21}H_{14}O_{13}$
γ) Hamamelitannin: $C_{14}H_{14}O_9$
δ) Chelubinic acid: $C_{28}H_{24}O_{19}$
ε) Tannin: ?
b) of the styrene series:
Unknown.

B. Gallo-ketotannoids.
a) of the benzene series:
α) Gallylgallic acid of Etti:



b) of the stryene series:
Unknown.

C. Oxydation products of the oxy-acids of the protocatechuic acid series.

a) of the benzene series:
Natural tannoids still unknown.
Katellagic acid of Schiff: $C_{14}H_8O_7$.
Results according to the equation:
$2C_7H_6O_4+O=C_{14}H_8O_7+2H_2O$.

b) of the styrene series:
Unknown as tannoids.

D. Condensation products of the oxy acids of the protocatechuic acid series.

a) of the benzene series:
Unknown as tannoids.

β) The methyoxygallylgallic acids of Etti.

By splitting off a second molecule of water from gallylgallic acid, rufigallic acid which has been characterized as hexahydroxyanthraquinone results. (See D, a, 1.)

b) of the styrene series:
Unknown.

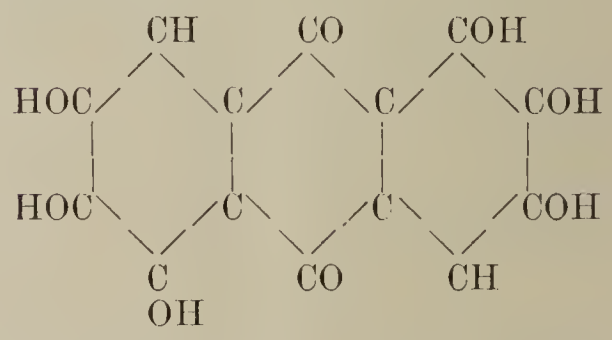
C. Oxydation products of the oxy acids of the gallic acid series.

a) of the benzene series:
α) Ellagic acid: $C_{14}H_6O_8+2H_2O$
β) Ellagentannic acid:
$C_{14}H_{10}O_{10}$
With this group are also to be enumerated the synthetic
γ) Purpurogallin: $C_{18}H_9O_{14}$
δ) Galloflavin:
$C_{13}H_6O_9$ (accord'g to Graebe & Bohn)
$C_{12}H_8O_8$ (according to Hausmann).

b) of the styrene series:
Unknown as tannoids.

D. Condensation products of the oxy acids of the gallic acid series.

a) of the benzene series:
1) Condensation products of gallic acid with itself:
Rufigallic acid (=hexahydroxyanthra quinone):



2) Those which result upon condensation of gallic acid with other benzene derivatives:
α) Anthragallol (Trioxyanthraquinone),
β) Pentoxyanthraquinone,

b) of the styrene series:
Unknown as tannoids.

[In *group II.* very likely belong the resinotannols of Tschirch which yield protocatechuic acid when heated with potassa.]

γ) Styrogallol (o-dioxyanthracumarin),
δ) Gallocyanin, prune, gallanin blue.

b) of the styrene series:
Unknown as tannoids.

II. Glucosidal Compounds.

III. Group: Glycotannoids.

1. Subgroup:
Protocatechu-glucotannoids.

a) of the benzene series:
α) Protocatechu-6-glycotannoids of the benzene series.
β) Protocatechu-5-glycotannoids of the benzene series.
Fustin-tannoid of Schmid (from Rhus continus L.)

b) of the styrene series:
α) Protocatechu–6–glycotannoids of the styrene series.
β) Proeocatechu–5–glycotannoids of the styrene series.
1. Dioxycinnamic acid-glycotannoid (Glycosyl-dioxycinnamic acid, coffee- or maté-tannic acid, igasuric acid [Schaer]),
2. Cinchotannic acid,
3. Chinovatannic acid,
4. Galitannic acid (from Galium verum and Gaparine),
5. Callutannic acid (from Calluna vulgaris),
6. Leditannic acid (from Ledum palustre),
7. Rhodotannic acid (from Rhododendron ferrugineum),
8. Sorbus tannic acid,
9. Fabiana tannic acid (from Fabiana imbricata),
10. Ilextannic acid (from Ilex aquifolium).

2. Subgroup:
Gallo-glucotannoids.

a) of the benzene series:
α) Gallo-6-glycotannoids of the benzene series.
β) Gallo-5-glycotannoids of the benzene series.
Pomegranateroot-tannoid.

b) of the styrene series:
α) Gallo-6-glycotannoids of the styrene series.
β) Gallo-5-glycotannoids of the styrene series.

IV. Group: Phloroglucotannoids.

1. Subgroup: *Protocatechu-phloroglucotannoids.*	2. Subgroup: *Gallo-phloroglucotannoids.*
a) of the benzene series: Quebrachotannic acid, Catechutannic acid, Felix tannic acid, Hop tannic acid, Ratanhia tannic acid, Chestnut tannic acid, Tanacetum tannic acid, Kolatannin.	a) of the benzene series. Unknown.
b) of the styrene series: Phlorogluco-dioxycinnamic acids or œnotannoids (œnotannins) of A. Gautier. (Analogues of glucosyl-dioxycinnamic acids.)	b) of the styrene series: Unknown.

[Schweiz. Wochenschr. f. Ch. u. Pharm. 36, p. 436.] *E. K.*

Botany and Pharmacognosy.

Tunisian Beeswax.—M. Bertainchand and Marcille report on the examination of thirty-three samples of genuine Tunisian beeswax The figures obtained show considerable divergence from the accepted standards for English and French beeswax, both in the free acid number and ester numbers and the iodine absorption. The highest and lowest figures obtained were: Free acid number, 17.4 to 20.6; ester number, 69.7 to 70.5; iodine absorption index, 6.7 to 17.12. The lowest melting point was 61° C., the highest 64° C.; in specific gravity the specimens ranged from 0.9685 to 0.972. From these data the waxes, although perfectly pure, would be regarded as adulterated if judged by the accepted standards.

[Bull. de la direction de l'agricult. et Commerce de Regence; from Paint, Oil and Drug Reporter, 54, p. 33.] *W. A. P.*

Cortex Frangulæ.—The active constituents are divived by Aweng into those which are soluble and into those which are insoluble in water. Both groups consist of several glucosides. Those of the former (primary) group are converted into those of the latter (secondary) by organic hydrolysing agents: enzymes. Inorganic hydrolysing agents, hydrochloric and sulphuric acids, break down the glucosides of both groups into: 1. chrysophanic acid; 2. emodin of Schwabes; 3. a substance resembling the rhamnetin of Liebermann.

Both groups of glucosides possess carthartic properties and act painlessly. The unpleasant action of the fresh bark is evidently attributable to a ferment, for if this supposed ferment is destroyed by heat, this secondary action disappears.

Inasmuch as most of the decomposition products of the glucosides are therapeutically inactive, it is necessary to avoid their complete hydrolysis in making pharmaceutical preparations. For liquid preparations the primary

glucosides only are suitable. A solvent, such as glycerin or 10 p. c. alcohol, which does not permit the growth of schyzomycetes, must be used. The secondary glucosides are bitter and the use of MgO or CaO causes the formation of insoluble compounds with the secondary glucosides, thus removing them.

Aweng recommends a dry extract to be prepared according to the directions for the preparation of *Extractum Rhei* (evidently Ph. Helv.), also a solution of the primary glucosides in glycerin. The powdered bark is freely moistened with water and heated on a waterbath for an hour to coagulate the ferment. It is then set aside for 12 hours to allow any secondary glucosides that have gone into solution to precipitate. The powder is percolated with cold water and the percolate, after the addition of glycerin, is evaporated to the volume of a fluid extract. A 60 p. c. alcohol can be substituted as menstruum and the alcohol recovered, etc. The secondary glucosides which result as by-product can be used with the dry extract in the preparation of pills.

[Schw. Wochenschr. f. Chem. u. Pharm. 46, p. 445.] *E. K.*

Occurrence of Methyl Salicylate. — Dr. van Romburgh of the botanical Garden at Buitenzorg in Java has recently furnished additional proof of the wide distribution of methyl salicylate in the vegetable world. Of 900 plants examined for volatile constituents, 160, or 18 percent, rendered a distillate containing more or less of this ester. None of the distillates furnished the methyl salicylate reaction when the plants had been distilled the day when plucked, but did so when distilled one day after. This observation sustains the inference made by Messrs. Bourquelot, Schneegans and Gerock some time ago that methyl salicylate is fixed in the plants as a glucoside.

Dr. van Romburgh found methyl salicylate most frequently in plants of the family of *Leguminosae*, but also in one or several species of the families *Aurantiaceae*, *Celastrineae*, *Compositae*, *Cupuliferae*, *Ebenaceae*, *Euphorbiaceae*, *Gramineae*, *Jasmineae*, *Lonicereae*, *Meliosmeae*, *Myrtaceae*, *Olacineae*, *Polygaleae*, *Rhamneae*, *Rosaceae*, *Rubiaceae*, *Sapindaceae*, *Staphyleaceae* and *Tiliaceae*. The ester is contained sometimes only in one or more organs, sometimes in all parts of the plant.

The reviewer desires to call attention in this connection to an error which he has assisted in promulgating. In a report on the occurrence of methyl salicylate (see vol. 16, p. 105 of this journal) the discovery of methyl salicylate in *Gaultheria punctata* and *G. leucocarpa* is attributed to Koehler. De Vrij now claims the honor of discovery and states that he caused Koehler to submit the oils of both plants to a closer examination. Koehler did this without giving de Vrij the proper credit, hence the common error. De Vrij's observation was published in 1871 in the Pharm. Journ. [3], 2 p. 503. Inasmuch as the available file of this journal is not complete the

older claim of de Vrij escaped the attention of the compilers of the list referred to. [Report S. & Co., Oct. '98, p. 45; from Proc. Acad. Sc. at Amsterdam.] *E. K.*

Practical Pharmacy.

Decoctions and Infusions.—A. Conrady is of the opinion that general rules for decoctions and infusions are out of harmony with modern science and proposes that each drug be studied separately. For *Decoctum chinæ* 5:200 he proposes hot percolation as accomplishing better extraction than the old decoction method. A strength greater than 5:200 is useless unless acid is employed. For *Decoctum condurango* he proposes percolation with water of a temperature between 40—50° as giving the best results.

[Schw. Wochenschr. f. Chem. u. Pharm. 46, p. 449.] *E. K.*

Spirit of Nitrous Ether.—W. L. Scoville presents the following method for the manufacture of nitrous ether without distillation:—

Dissolve 77 grams of sodium nitrite in 115 cc. of water, add 75 cc. of alcohol and place the mixture in a pint flask or bottle. Submerge the bottle to the shoulder in ice water and cool the mixture to or below 15° C. Now allow to drop slowly into the mixture 30 cc. of sulphuric acid, previously diluted with 100 cc. of water and cooled. When the reaction is over, which will require about 2 hours, during which the operation needs no attention, separate the floating ethereal layer, shake it in a small, cooled, separating bottle with 10 cc. of ice water to remove traces of alcohol, then with 10 cc. more of ice water, in which 1 gm. of sodium carbonate has been dissolved, and having separated the ether carefully from the aqueous fluid, place in a dry bottle with 3 gm. of dry potassium carbonate to remove traces of water, and finally transfer to a strong glass bottle. This product may be preserved as concentrated nitrous ether or may be diluted at once with sufficient deodorized alcohol to make twenty-two times the weight of the nitrous ether obtained. [Mass. Ph. Assoc. Proc.] *A. B. S.*

Fluid Acetracts.—Under this title Jos. P. Remington introduces a new class of preparations. As the name indicates, they are fluid extracts made with acetic acid instead of alcohol. Acetracts is the name applied to solid extracts made with acetic acid. From numerous experiments Prof. Remington concludes that ten percent acetic acid will answer in most cases, but that a few drugs like sanguinaria and ipecacuanha are best made with sixty percent acetic acid. He does not propose to replace alcohol in all cases, but adds that "from work which has already been done, the writer feels warranted in stating that fully one half of the official fluid extracts could be replaced by fluid extracts." The writer invites investigation of the subject with a view to their introduction into the next Pharmacopœia.

[Am. Drug. 33, p. 260.] *A. B. S.*

The Assay of Alkaloids in general and of Cinchona Alkaloids in particular. In order to overcome the necessity of using a very fine powder for the assay of cinchona bark and yet avoid the use of sulphuric acid for extraction, W. Lenz suggests the applicability of chloral hydrate as a solvent. 10 grams of powder are moistened with a solution of 20 grams of chloral hydrate in 12.5 grams of water in a flask of 300 ccm. capacity and set aside over night. The bark swells considerably and the mixture constitutes a tough mass the next day. 150 ccm. of dilute alcohol and 2 grams of hydrochloric acid are added and the mixture boiled for a half hour on a water-bath and then filtered through glass-wool. With the aid of a force filter the residue is washed with warm dilute alcohol to which a few drops of hydrochloric acid have been added. The filtrate containing the total alkaloids is evaporated to the consistency of a syrup, to which a few drops of hydrochloric acid and little water are gradually added with constant stirring until the amount of precipitated resin does not increase. Care should be taken that the resin separates in small particles and not in lumps which are apt to mechanically enclose alkaloid. The alkaloidal solution is filtered and the residue kneeded with water to which a few drops of hydrochloric acid have been added. By taking aliquot parts, the necessity of washing is avoided and the process considerably shortened. The filtered acid solution is rendered alkaline in a separating funnel and shaken with 100, 50 and 50 ccm. of chloroform respectively. The united chloroformic solutions are then exhausted by shaking with 100, 50 and 50 ccm. resp. of 2 p. c. hydrochloric acid and finally with pure water. To the united acid solutions in a separating funnel 100 ccm. of ether are added and then an excess of soda solution and the mixture shaken. Immediately after separation of the two liquids the ether is removed and the alkaline solution rapidly shaken twice with 50 ccm. of ether. The ether from the united ethereal solutions is recovered by distillation and the residue dried at 100° and weighed.

With this method the author obtained results which he considers an improvement over the Ph. G. ed. III. method. Detailed figures are to be published later. [Pharm. Ztg., 43, p. 683.] *E. K.*

New Remedies.

Antipyretics.*

Group V.—Quinoline Derivatives.

This nucleus (C_9H_7N) furnishes us antiseptics as well as antipyretics Among the simpler derivatives we have the salicylate, tartrate, citrate and acetamido quinoline, which serve the purposes of both antiseptic and antipyretic.

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* Cont. from p. 26.

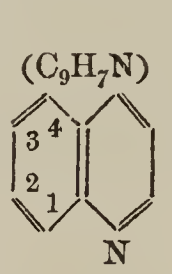
Through attempts at the synthesis of an artificial quinine (a derivative of quinoline) a number of valuable substitution products were obtained. Among the first was aceto-*o*-amido-quinoline, $C_9NH_6(CH_3CONH)$, which represented the "antifebrine" analogue of quinoline. The ortho-phenol-sulphonic acid derivative "diaphterine" proved to be an antiseptic. Later, Filehne discovered that Fischer's methyl (Kairine M) and ethyl (Kairine A) derivatives of ortho-oxy-quinoline-tetra-hydride possessed antipyretic properties. Thus the first steps were made towards the production of artificial alkaloidal antipyretics; owing, however, to the unpleasant secondary effects, the kairines were soon abandoned. This led, however, to a careful study of quinoline, resulting in a number of new discoveries, among which was Skraup's "thalline," a tetra-hydro-*p*-quinanisol, the sulphate and tartrate of which possess antipyretic properties. Among some of the more important of quinoline antipyretics are—

Aceto-Ortho-Amido-Quinoline, $C_9H_6N(NH.CH_3CO)$: This body is obtained by introduction of an acetylated amido group into the ortho (1) position of quinoline.

Analgene is ethoxy (1) acetylamido (4), quinoline. This compound is analogous to acetyl-*p*-phenetidine.

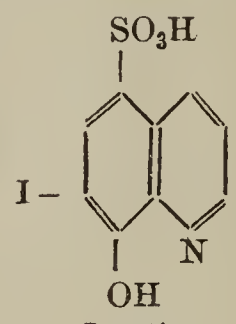
Thermifugine, $C_9H_8N(CH_3)(OH)CO.ONa$: The sodium salt of methyl-hydroxy-hydroquinoline-carboxylic acid.

To this same class of oxy-quinolines belongs that excellent antiseptic, loretine (*m*-iodo-*o*-oxyquinoline-ana-sulphonic acid (4)), the structural formula of which is shown along with the other members of this class.

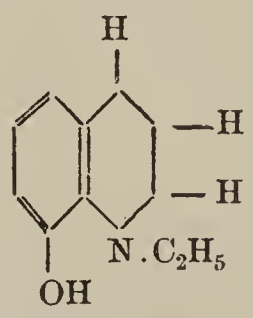


Quinoline.

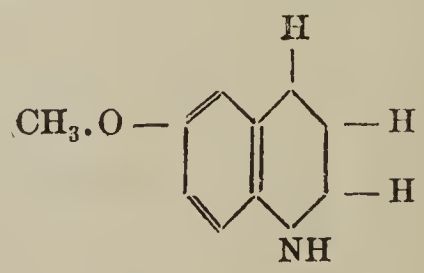
Analgene.



Loretine.



Kairine.



Thalline.

Group VI.—Urethanes.

As type of this group we have the esters of carbamic acid—

$CO(OH)NH_2$

or urethane. These bodies, like their prototype, ethyl urethane—

$$CO(OC_2H_5)NH_2$$

are classed under the hypnotics; if, however, we replace a hydrogen atom of the amido group by benzene residues, antipyretics result.

Euphorine—

$$CO(OC_2H_5)NHC_6H_5$$

Phenyl urethane. This body possesses slight sedative and antiseptic properties. If an oxy-phenyl group is introduced, we obtain a para-oxy-phenyl-urethane, the acetyl derivative of which constitutes the entering group in—

Neurodine—

$$CO(OC_2H_5)N\begin{matrix}\diagup CH_3CO \\ \diagdown C_6H_4.OH\end{matrix}$$

Acetyl-*p*-oxy-phenyl-urethane. The ethyl ether of neurodine gives us—

Thermodine—

$$CO(OC_2H_5)N\begin{matrix}\diagup CH_3CO \\ \diagdown C_6H_4OC_2H_5\end{matrix}$$

Acetyl-*p*-ethoxy-phenyl-urethane.

Group VII.—Salicylic Acid Derivatives.

Di-Iodo-Salicylic Acid—

$$C_6H_2I_2(OH)COOH.$$

Benzacetine—

$$C_6H_3(OC_2H_5)(NHCH_3CO)COOH$$

Acetamido-methyl-salicylic acid.

Salophene—

$$C_6H_4(OH)COO.C_6H_4.NHCH_3CO$$

Acetamido-salol or Acetyl-*p*-amido-phenol-salicylic-ester.

Salicylo-Sulphonate of Sodium—

$$C_6H_4(OH)COOH)SO_3Na.$$

Sodium Anisate—

$$C_6H_4(OCH_3)COONa$$

also antirheumatic.

Pyratine,—*p*-ethoxyphenyl-succinamide—

$$\begin{matrix}CH_2—CO \\ | \qquad \diagdown \\ CH_2—CO \diagup\end{matrix} N.C_6H_4.OC_2H_5$$

[Journ. Soc. Chem. Ind.] *E. K.*

Orthoform-new.—Einhorn and Heinz introduced into medicine, under the name orthoform (Phar. Ztg. 1897, p. 70), the well-known p-amido-m-oxybenzoic acid methyl ester. The new orthoform recently placed in the market is the m-amido-p-oxybenzoic acid methyl ester. According to Klaussner (Münch. Med. W. 1898, No. 42) its physiological actions are similar to those of orthoform. As advantages may be mentioned, that this powder is of uniform fineness, much whiter than the old orthoform and does not become lumpy as easily. The possibility of cheaper production by the Höchst Farbwerke is the main reason for the introduction of the new orthoform and nothing else ought to hinder the common use of it since it has been proven to lose none of its physiological action when in a 10 or 20 p. c. mixture of tallow or starch. [Phar. Ztg. 86, p. 769.] *Chas. W. Gorr.*

Literary.

Books and Pamphlets Received.

Am. Pharm. Ass'n.—Baltimore. Proceedings of the American Pharmaceutical Association at the forty-sixth annual meeting, held at Baltimore, Md., August, 1898. Also the constitution, by-laws and roll of members. One vol., pp. xxx, 1225. 1898.

J.-B. Baillière et Fils—Paris. Formulaire des médicaments nouveaux pour 1899 par H. Bocquillon-Limousin, pharmacien de 1re classe. One vol., pp. 332. 1899. Fr. 3.00.

The Chemical Publ. Co.—Easton, Pa. Inorganic chemistry according to the periodic law by F. P. Venable of the University of North Carolina and Jas. L. Howe of Washington and Lee University. One vol., pp. v, 266. 1898. $1.50.

Verlag von Arthur Felix—Leipzig. Atlas der officinellen Pflanzen. Darstellung und Beschreibung der im Arzneibuche für das deutsche Reich erwähnten Gewächse. Zweite vermehrte Auflage von Darstellung und Beschreibung sämmtlicher in der Pharmacopœa Borussica aufgeführten officinellen Gewächse von Dr. O. Berg und C. F. Schmidt. Herausgegeben von Dr. Arthur Meyer und Dr. K. Schumann. Zwölfte Lieferung, 1894, enthaltend Tafel LXVI—LXXb: Dreizehnte Lieferung, 1895, enthaltend Tafel LXXI—LXXVI.

R. Gaertner's Verlagsbuchhandlung—Berlin. Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Literatur. Herausgegeben von Dr. Emil Jacobsen. 37. Jahrgang. 1898. Erstes Halbjahr. Zweite Hälfte. pp. 165—351. mit in den Text gedruckten Illustrationen.

Verlag von Albert Goldschmidt—Berlin. Trug-Gold. Erzählung aus dem 17. Jahrhundert von Rudolf Baumbach. Miniatur-Ausgabe. Elfte Auflage. Ein Bd., pp. 384, mit acht Illustrationen von Ph. Grot Johann. 1899.

Lea Brothers & Co.—Philadelphia. The Medical News pocket formulary for 1899. By Dr. E. Quin Thornton. One vol., pp. 272. 1899. $1.30.

Nelson and Baker—Detroit. Handbook of practical assaying of drugs and galenicals. A manual for the pharmaceutical student, and guide to the practical pharmacist who has occasion either to standardize his own preparations or to test the drugs and galenicals he dispenses. By Dr. A. B. Lyons. One vol., pp. 245. 1899. $0.75.

Verlag von Julius Springer—Berlin. Schule der Pharmacie. IV. Botanischer Theil. Bearbeitet von Dr. J. Holfert. Zweite vermehrte und verbesserte Auflage. Ein Bd., pp. xi, 316, mit 465 in den Text gedruckten Abbildungen. 1899. M. 5.00.

Authors—Madison, Wis. The poisonous effect exerted on living plants by phenols. By Rodney H. True and Carl G. Hunkel. Pamphlet, pp. 29. Reprint from Botanisches Centralblatt, vol. 76.

Author—Madison, Wis. Physiological action of certain plasmolyzing agents. Pamphlet, pp. 10. Reprint from Bot. Gazette, vol. 26.

Author—Cincinnati. 1. Aloe succotrina, Pamphlet, pp. 14; 2. Jateorhiza calumba, Pamphlet, pp. 10; by J. U. Lloyd. Reprinted from Western Druggist for 1898; 3. The odium of ecleticism by J. U. Lloyd. Pamphlet, pp. 8. Reprint from the Eclectic Medical Gleaner.

Authors—Madison. Die wässerigen Lösungen der Seifen. Von L. Kahlenberg und O. Schreiner. Pamphlet, pp. 15. Reprint from Zeitschr. f. physik. Chem., vol. 27.

Secretary of the Interior—Washington. Report for the year ended June 30, 1898. One vol., pp. 242.

U. S. Dept. of Agr.—Washington. Thirty poisonous plants of the U. S. By V. K. Chestnut. Farmer's bulletin No. 86, pp. 32.

——Sheep scab: its nature and treatment. By D. E. Salmon and Ch. W. Stiles. Bulletin No. 21 of the Bureau of Animal Industry, pp. 64.

U. of W. Agr. Expt. St.*—Madison. 1. Pasteurization as applied to butter making. Bulletin No. 69, pp. 40; 2. Fifteenth annual report, pp. 312.

* The bulletins and annual reports of this station are sent free to all residents of Wisconsin upon request.

Reviews.

SCHULE DER PHARMACIE. III. Physikalischer Theil. Bearbeitet von Dr. K. F. Jordan. Zweite, sehr vermehrte und verbesserte Auflage. Ein Bd., pp. VIII, mit 142 in den Text gedruckten Abbildungen. Verlag von Julius Springer, Berlin. 1898. M. 400.

The third part of the "Schule der Pharmacie" consists of a volume of 265 octavo pages from the pen of Dr. K. F. Jordan, setting forth in an elementary manner the principles of physics. In passing judgment upon the scope of this book, the reader should bear in mind the fact that the work is not intended to be complete, nor is it even designed as a text-book, but that it is written to enable apprentices in pharmacy during their spare moments to gain a substantial knowledge of the principles of physics, so that they may later pass an examination in the subject. It is to be expected, therefore, inasmuch as the book is written for a definite purpose and for a special class of readers, that those portions of the subject of physics which apply more directly to the pharmacist's use receive greater attention than many other subjects of equal physical importance. It is, accordingly, to be regarded as commendable that such subjects as the balance and specific gravity are treated clearly and fully, while such more purely physical parts as the pendulum, interference of light, and the whole subject of acoustics receive much briefer attention.

It is, however, deeply to be regretted that Dr. Jordan's treatment of the subject of mechanics is of such a nature as seriously to impair the usefulness not only of this portion of his book, but of many other portions which depend for their explanation directly upon elementary mechanical principles. The distinction which he draws between instantaneous and constant forces is an unfortunate one, inasmuch as it leads to two different mathematical expressions for force. This, however, could have been anticipated from his erroneous statement that an instantaneous force equals the product of mass and velocity. A simple statement in the book of Newton's Laws of Motion would have made this part of the subject much clearer. Later, on the same page (p. 40), he states that constant forces are called simply forces or energy, implying, therefore, that these terms can be used indifferently. That this cannot be a slip of the pen is revealed by the fact that this same page contains the author's unfortunate admission that to his own mind the distinction between force and energy is a "superfluous and confusing" one. After a fundamental error of the magnitude of this, the reader cannot wonder that later in the book,

in endeavoring to set forth the principles of the Conservation of Energy, he speaks of this principle as the Conservation of Force and even defends this latter statement. On page 47, after discussing the subject of work in its universally accepted form, Dr. Jordan says that instead of adopting the usual definition of work as what is accomplished by force acting through space, he proposes a new definition, whereby work is the product of mass and space. By combining this statement with the equally erroneous one that force is equal to mass times velocity, he deduces the absurd result that work equals the product of force and time. It is upon a foundation of these yielding sands of error that Dr. Jordan builds the tottering superstructure of his book.

Other passages containing errors of equally serious import might be pointed out. On page 49, the author states that a mass of matter at rest under the influence of gravity continually performs work. On page 222, the long rejected Grotthuss' hypothesis is offered as an explanation of the process of electrolysis, while but a passing reference, and that given in parenthesis, is made to Arrhenius' theory of dissociation. In order to explain the action of a magnet on a magnetic needle, the author propounds, on page 235, an entirely new theory of magnetism, whereby the iron comprising the magnet is traversed by a "north magnetic" current" and a "south magnetic current" streaming through the bar in opposite direction. The only ground assigned for so revolutionary a theory is a similarity between the movements of the poles of a magnetic needle near a magnet and the wandering of the ions in an electrolyte.

Even if after careful scientific investigation Dr. Jordan had felt persuaded of the correctness of a new theory, it will be clearly seen to be an error in judgment to announce to the world a new conception of a physical magnitude in an elementary book of the simplest order, especially where this book is designed to be used by students who will be examined later according to the older and universally accepted standards. Accordingly the freedom with which the author propounds new theories and definitions in the book now under consideration is deserving of sharp criticism. Taken as a whole, therefore, it is seriously to be doubted if the third part of the Schule der Pharmacie can be recommended without qualification to those who desire a clear and concise statement of the elements of the principles of physics.

Benjamin W. Snow.

ATLAS DER OFFICINELLEN PFLANZEN. Darstellung und Beschreibung der im Arzneibuche für das deutsche Reich erwähnten Gewächse. Zweite verbesserte Auflage von Darstellung und Beschreibung sämmtlicher in der Pharmacopœa Borussica aufgeführten officinellen Gewächse, von Dr. O. C. Berg und C. F. Schmidt. Herausgegeben durch Dr. Arthur Meyer und Dr. K. Schumann. Leipzig, Verlag von Arthur Felix. Lieferungen 12 und 13. Pro Lieferung, M. 6.50.

Berg and Schmidt's Atlas has long since taken its place as a classic in pharmacognostical literature, the first edition marking an important advance in the study of drugs. In the second edition, the preeminence of this work, especially in the quality of its illustrations is still to be seen. Each number contains six plates as well as text. On the ground covered, the text is very satisfactory. The botanical characteristics of family, genus and species are given in great fullness. The description of the floral parts, vegetative organs and fruit goes into great detail. The names of the editors is a sufficient guaranty for the accuracy of these descriptions. A feature of great value is the very full synonomy, each Latin name being cited and the authority therefore, together with a reference to the place of publication of the description. A brief statement is made indicating the parts of the plant used in medicine, or elsewhere. The geographical distribution of the plants under discussion is stated. Frequently points of especial interest to the botanist regarding nomenclature, relation to allied forms and similar problems find a place in the text.

Perhaps the rarest part of the work is found in the colored plates illustrating the descriptions. For delicacy of coloring and truth to nature, the writer knows of no work excelling that in question. These plates represent the foliar and floral parts as well as in many cases the fruits. Dissections give a detailed and accurate idea of the structure of the flower. The plates are usually strictly botanical in subject.

The work is, speaking as a whole, a work of botany rather than of pharmacognosy. Products, except as they are derived from the parts mentioned, fruits, leaves or flowers, such parts as are of especial interest to the botanist, are neither described in the text nor figured in the plates. This does not, however, detract from the value of the work since a botanical understanding of drug-producing

plants is of greatest importance. As far as the writer is aware, no work presents this phase of the subject more acceptably than does this. *Rodney H. True.*

TEXT-BOOK OF MEDICAL AND PHARMACEUTICAL CHEMISTRY by Dr. Elias H. Bartley. Fifth edition, revised and enlarged. One vol., pp. XIV., 738, with ninety-six illustrations. P. Blakiston's Son & Co., Philadelphia, 1898. $3.00.

Like most text-books of this class, Bartley's contains an introductory part on mechanics and physics. Part II treats of theoretical chemistry; part III discusses the inorganic elements and their compounds; part IV organic chemistry, i. e. the compounds of carbon. Although part IV includes proteids, leucomaines, animal pigments etc., part V is more particularly devoted to "physiological and clynical chemistry" and includes chapters on the following subjects: the soluble ferments, the organized ferments, nutrition, foods and diet, digestion, milk, urine, abnormal constituents of urine, urinary deposits or sediments.

The fact that a book has passed through five editions in about thirteen years, unquestionably shows that it has been found useful to medical students for whom it was especially prepared. If one, on the other hand, recalls how little time is devoted in medical colleges to the study of chemistry, one may stop to reflect how it is possible for them to grasp the chemistry of such subjects as camphors, sugars, alkaloids, ptomaines, peptones etc. enumerated in the table of contents. Upon perusal of the text, it will be found that these complex subjects are not expected to be mastered, but that the student learns little more than their names. The information given is not only frequently misleading, but at times wrong.

The author does not claim any originality as to the contents, but states that the subject matter has been compiled from a large number of treatises which he enumerates in the introductions. We fear, however, that the subject matter was not even digested before it was compiled. Speaking of the valency of the elements, he states (p. 75) that the variability "always takes place in pairs, so that a dyad may become a tetrad, but not a triad. A monad may become a triad or a pentad, but never a dyad or a tetrad." How, e.g. is the valency of nitrogen to be explained in accordance with this rule in nitrogen dioxide, or of sulphur in persulphuric acid? On p. 97 the table of the valence of the most important elements contains but

six columns. Heptads evidently do not exist and chlorine, bromine and iodine are not accorded any valence higher than one. On p. 114 these three elements are placed in group VII with a valence toward oxygen represented by the general formula R_2O_7 at the head of the column. Other instances of a similar nature might be mentioned showing that contradictory notions from different text-books were embodied in this compilation.

Structural chemistry seems to play an important role in this text-book, but it sometimes is of the nature to bring structural chemistry into disrepute. Such errors as occur on p. 94 may be merely typographical, but the definition of benzene on p. 332 evidently was the cause for some very sarcastic remarks made by a prominent chemical educator at the Boston meeting of the Am. Assoc. for the Adv. of Sc. last summer.

What principle, if any, was followed in the classification of organic compounds, a logically trained mind will have difficulty to perceive. Why alcohols, aldehydes and ketones as well as the halogen substitutive products of some, and even complex mixtures should be mentioned in connection with one series of hydrocarbons and not in others, it is difficult to understand. A particular charm seems to lie in such terms as camphor etc., which are chemically indefinable, if an author will go to the extent of taking e. g. thymol away from the phenols and discuss it under the camphors as belonging to a series of the general formula of saturation CnH_{2n-4}.

Aside from these theoretical inconsistencies which possibly do not disturb the mental equilibrium of the medical student the book contains much so-called practical information on substances of interest to the physician. It is possibly as a reference book that this "text-book" has been most serviceable. Press work and paper are very good on the whole, and the book makes a neat appearance. It is provided with a glossary of unusual chemical terms and an index of twenty-eight double column pages. *E. K.*

SCHULE DER PHARMACIE. Botanischer Theil. Zweite vermehrte und verbesserte Auflage. Mit 465 in den Text gedruckten Abbildungen. Bearbeitet von Dr. J. Holfert. Verlag von Julius Springer, Berlin 1899. M. 5.00.

Early in the nineties the "Schule der Pharmacie" made its appearance in five parts, namely: 1. Practical Part, 2. Chemical Part, 3. Physical Part, 4. Botanical Part, and 5. Technical Part. The

work was intended to serve as a guide for prospective pharmacists while serving their apprenticeship. A second edition of the work is now appearing, the first four parts already having come from the printer. The new edition of part four is enlarged by about a dozen pages; in a few places the illustrations have been changed and the subject matter has in many places been rewritten and made to conform to present knowledge. On the whole the botanical part appears to serve the purpose for which it was written very vell. An English translation of the work would be very serviceable in schools of pharmacy.

L. S. Cheney.

MATERIA MEDICA, PHARMACY, PHARMACOLOGY AND THERAPEUTICS by Dr. W. Hale White, edited by Dr. Reynold W. Wilcox. Fourth American edition, thoroughly revised. P. Blakiston's Son & Co., Philadelphia. 1898. Cloth, $3.00; leather, $3.50.

The appearance of the second English edition of this excellent work has given the American editor an opportunity for thorough revision. In the process the total number of pages has not been materially increased, the former convenient size being preserved. A comparison with the foregoing edition shows that the revision has been carried out into details, and the subjects in which science has added well authenticated information during the year are brought up to our present knowledge. The drugs of animal origin are arranged in classes according to their uses. The antitoxins and organic extracts are briefly treated. A feature useful to students by way of giving a general view of the sources of drugs loses much of its value by adherence to an antiquated system of botanical classification. Gray's Manual is now well-nigh the only reputable text-book of plant classification that still keeps the Gymnosperms between the Monocots and the Dicots. Gray's order appears to have been followed here. The general acceptance of Engler's system by botanists fully justifies other writers in likewise taking an advanced step. Another point involving a similar question is the use of the metric system. This has been so long in use in scientific circles that its adoption in all the applied sciences seems advisable. Only a mistaken conservatism can keep the metric system out of books like the one under discussion and only error can keep the system of botanical classification here found in this place.

With this, the writer believes the chief points open to criticism are enumerated. To be sure the system of classification of the drugs

is itself hardly satisfactory in all respects. While classes are in general based on the action of the drugs, some headings co-ordinate with these are derived from chemical properties, a lack of consistency being apparent.

In general, the choice of subject matter and its presentation is very satisfactory and many more points could be found worthy of commendation than the strictest critic could find to criticize. The writer has given it the trial of class use and in this most crucial test the book has met the demands made upon it.

In the revision a number of points in mechanical get-up have been improved, leaving little more in this direction to be desired.

An increase in the number of simple diagrams illustrating the method of the action of drugs would be welcome to beginners in the subject. *Rodney H. True.*

Symbolæ Antillanæ seu Fundamenta Floræ Indiæ Occidentalis. Volumen I. Fasciculus I. Bibliographia Indiæ occidentalis botanica. Ignatio Urban. pp. 1—192. Berolini, Fratres Borntraeger. 1898. M. 10.80.

With the present fascicle the Borntraeger Brothers begin the publication of what promises to be an elaborate series of treatises upon the flora of the West Indies under the editorship of Dr. Prof. Ignatius Urban. Very appropriately the first of this series is bibliographic. In it the author, Dr. Urban, brings together well nigh everything that has ever been published concerning the vegetation of the region. Recent works covering other regions and incidentally referring to or including West Indian plants, monographs dealing with families or genera not exclusively or in large part West Indian, and descriptions of single species in general lists, are for the most part excluded.

In addition to "floras" or lists of plants, papers on phytogeography, bibliography, paleophytology, biology, botanical gardens in the West Indies, pharmacognosy and plant cultivation in the tropics, are included. The Antilles, the Bermudas, islands along the coast of Venezuela and a small portion of southern Florida compose the territory considered in the treatise. As far as possible the author has outlined briefly the contents of the works cited. The work forms a very important addition to botanical bibliography and its appearance is particularly opportune for American botanists in view of our new interest in all things pertaining to the islands about the gulf.

L. S. Cheney.

SUPPLEMENT.

Scientific Societies.

American Chemical Society.—This society was one of the eleven societies which held their midwinter meetings in New York City during the Christmas recess. The President's address by Prof. Munroe of Washington was on Explosions caused by commonly occurring substances. Prof. Raoul Pictet of Geneva, Switzerland, spoke on The suppression of chemical phenomena at low temperatures, the lecture being accompanied by demonstrations. Mr. Tripler gave an exhibition of the properties of liquid air.

Most of the sessions were held in Havemeyer Hall of Columbia University. Prof. E. W. Morley of Cleveland was elected President. Of the forty-five papers read the following are of more direct pharmaceutical interest:

E. R. Squibb: The assay of nux vomica.

W. H. Hess and A. B. Prescott: Vanillin and coumarin; their separation, identification and estimation in flavoring extracts. See p. 7.

H. M. Gortin and A. B. Prescott: Emetine octoiodide, and the extraction and estimation of alkaloids generally.

L. Kahlenberg, D. J. Davis and R. E. Fowler: The inversion of sugar by salts.

P. F. Trowbridge: Perhalides of quinoline.

J. H. Stebbins: The action of sulphuric acid on thymol.

German Chemical Society.—Under the auspices of this society Prof. Wm. Ramsay delivered a lecture on "The new gases and their relation to the periodic law" on the evening of Dec. 19, in the chemical institute at Berlin. He gave a most interesting account, says the Chemical News of the various properties of helion, argon, metargon, neon, and xenon, and illustrated his more recent investigations by limelight views of the appliances of his laboratory and by the spectra of the various gases, most of those present following his explanations with the aid of pocket spectroscopes. The lecture was delivered in German and was enthusiastically received by the audience including all prominent chemists of Berlin.

The lecture was followed by a supper. On the following afternoon Professor Ramsay delivered a lecture in English at the special request of the Empress. This lecture was likewise accompanied by demonstrations and was delivered in the Chemical Institute. It was attended by the Emperor and Empress who were accompanied by the British Ambassador. A third lecture was delivered by Prof. Ramsay at the Urania, the Berlin popular institute of natural sciences, thus showing that not only chemists and physicists, but the intelligent public, high and low, are interested in the new discoveries that have set the entire civilized world to thinking.

The sixth annual **Conference of Teachers of Chemistry** of the North

west was held at Ann Arbor, Mich., during the holidays: Prof. William McPherson of Ohio State University being temporary chairman, and Prof. A. B. Prescott of Michigan University (who, with Prof. W. W. Daniels of Wisconsin University, was responsible for the order of business), temporary secretary. The previous sessions have been held in Chicago. The Conference, says a reporter in The Nation for January 12, is unique in that it has no constitution, no dues, no permanent officers, no set papers, and in that it publishes no proceedings and sets forth no approved scheme of instruction. The entire time is spent in discussing questions left over from the preceding meeting or proposed by a committee appointed for that purpose. These questions have reference solely to instruction in chemistry in high school and college. At previous sessions the place, length, and character of the course in chemistry for the high school have received attention, especially the number and order of student's experiments: whether the work should be wholly qualitative or wholly quantitative or a mixture of the two; whether analysis, so called, should form any part of the course; and how to organize research work for high-school teachers in conjunction with the staff of the affiliated colleges. At the Ann Arbor meeting, questions pertaining to college chemistry were taken up—how to fit the instruction to high-school work; courses in physical chemistry, and courses in organic chemistry. The discussions have always been characterized by unusual freshness and vigor, and it is a pity that some permanent record of them has not been preserved and made public.

In Memoriam.

With the death of **Charles H. Heinitsh** on Thursday, Dec. 29, at the age of 72 years, the pharmaceutical history of an interesting apothecary's family at Lancaster, Pa., has come to an end. The family has had an interesting history in Europe and, since before the revolution, in this country. The Heinitzsch (the original way of spelling the name) drug store was established in 1782 and belonged to the family ever since. The deceased was an active member of his state and of our national association, and has received honors such as are rarely bestowed upon any of his calling. Unfortunately his only son preceded him, thus leaving no direct descendant.

January Journals.

The January Bulletin of Pharmacy contains an article on Our vicious patent laws by the editor, Mr. Helfmann, which is in the main an attack on product patents. One's own preparations by Sam Bucus gives a number of formulas for some of the more common classes of household remedies. Harry B. Mason in A blessing in disguise points to the indirect benefits that have come to the American druggist through the stamp tax, viz. organization, and the consequent development of the power resulting from united action. The pharmacist should test his purchases by James A. Gillespie, sounds almost like an axiom, yet we fear there are few to heed this warning.

No. 1 of Merck's Report, on the other hand, warns editorially against antagonism of patenting medicinal substances and concludes by

stating that to do away with product patents would result in injustice and injury. A. I. Cohn describes a Pressure percolator and filter; F. J. Gordon writes on How to induce physicians to prescribe N. F. Preparations; Wm. A. Jones on Matches; F. H. Knowlton on The bearberry; J. W. Ballard on Leaks, and how to stop them; and Wm. J. Robinson continues his article on Prescription incompatibles.

The American Journal of Pharmacy for January comments editorially on the necessity of a pharmacological examination of drugs and their preparations. Original papers are contributed by 1) E. R. Squibb: On acetic acid as a substitute for ethyl alcohol in extracting the active principles of some officinal drugs; 2) Gordin and Prescott: Emetine octoiodide and the extraction and estimation of alkaloids generally; 3) F. L. Lewton: Quebracho; 4) L. F. Kebler: Crystals of sodium chloride in fluid extract of Yerba Rheuma and a proximate analysis of this plant; 5) L. F. K.: A common error in recording results of proximate plant analysis; 6) T. S. Wiegand: Note on specific gravity; 7) C. Kleber: The chemistry of sassafras; 8) C. E. Smith: The pharmacopœial standard for belladonna plaster.

The frontispiece in Appleton's Popular Science Monthly is an excellent woodcut of August Kekulé, the genial chemical philosopher. The portrait is accompanied by a biographical sketch. Another article of historic interest is that by J. Norman Lockyer entitled A short history of scientific instruction, an address delivered at the Royal College of Science during October last. True tales of birds and beasts by David Starr Jordan reveals another phase, new to us at least, of the many-sided character of the President of Leland Stanford Jr. University.

Aside from the editorials, the January Western Druggist contains but one article that can in any way lay claim on originality, viz. that by Frank Edel on Aromatic waters and their preparation. The author claims that the waters of rose and orange-flower prepared from the oil do not possess the keeping qualities possessed by the distilled waters.

In an article on Pepsin test for the Pharmacopoeia of 1900 in the Druggists' Circular L. E. Sayre calls attention to a method of determining the value of pepsin by analyzing the products of digestion as described in Allen's Commercial organic analysis, vol. 4, p. 356. S. W. Williams, in an article on Belladonna standards reviews this subject. Laboratory notes, chiefly regarding adulteration is a brief account of some laboratory experiences by John E. Groff. The duty of the pharmacist toward the purchaser of poison by J. F. Hostelley, and Chemical affinity by Wm. A. Jones conclude the list of articles specifically contributed to this journal.

Bibliography.

A third edition of Neubauer & Vogel: Anleitung zur qualitativen und quantitativen Analyse des Harns has been issued by C. W. Kreidel's Verlag.

Lea Brothers & Co. announce for publication in March 1899, the first volume of Progressive Medicine, a new annual which will be issued in four handsome octavo, cloth bound and richly illustrated volumes of about 400 pages each. The several volumes will appear at intervals of three months.

What the busy physician needs to-day is a welltold tale of medical progress in all its lines of thought, told in each line by one well qualified to cull only that matter worthy of his attention and necessary to his success. He needs material which shall teach him all that the master of his specialty knows of the year's work.

It is with the object of presenting only such readable and useful material that these volumes are published, and every contributor to the pages of Progressive Medicine will say what he has to say in an original narrative form, so that every statement will bear a personal imprint expressing not only the views of the author cited, but the opinion of the contributor as well.

To insure completeness of material and harmony of statement, each narrative will receive the careful supervision of the General Editor, Dr. Hobart Amory Hare, whose reputation will everywhere be acknowledged as ensuring practical utility in a high degree. Those associated with Dr. Hare in the production of Progressive Medicine, include a brilliant gathering of the younger element of the profession.

The publishers offer to send full descriptive circulars and sample pages to those applying for them.

Merck & Co. have acquired from The Bulletin Publ. Co. the proprietorship of the American Medico-Surgical Bulletin, the publication of which has been suspended with the December issue of volume twelve. In its place are to be published Merck's Archives of Materia Medica and its Uses. Besides original articles on the physiological action and curative properties of drugs as well as the manner of their therapeutic employment, they are to furnish a general review on the advance made in materia medica. Such a review will not only be of interest to the physician, but to the intelligent pharmacist as well. The latter as well as the former ought also to derive benefit from the discussion of prescriptions which is to constitute a special feature. The price of $1.00 yearly is certainly moderate for the information furnished.

A special author's edition of The right side of the car was issued somewhat more than a year ago, the proceeds of which are to be used for the memorial to Dr. King, author of the American Dispensatory. The author of this very attractive and interesting little volume, Prof. J. U. Lloyd, now announces that he will also contribute the proceeds of the commercial edition to the same fund so long as necessary in the opinion of the committtee. The price of the two styles, cloth and paper, are $1.00 and 0.50 respectively. Those desiring a copy for themselves or friends should address Prof. John U. Lloyd, Cincinnati, Ohio.

Mr. C. G. Lloyd announces that he now has over 450 6½x8½ plates of native fungi. Unmounted photographs with descriptions will be mailed at 10 cents each to those

who desire them. Thus the twelve species of edible fungi described in the November issue of his Mycological Notes can be had within a week or ten days, the time necessary for printing.

The following notice has been received from the publisher of The Pharmacologist, Frederick K. Stearns of Detroit: "The publisher had the idea when he started The Pharmacologist that there was a field for just such a journal that should be devoted to the study of drugs from a medical standpoint; a journal which should be free from advertising and one whose commercial features should be entirely separate and distinct from its scientific part. The publisher is now inclined to believe that he was laboring under a delusion, and while there was considerable interest taken in the journal among the professions of medicine and pharmacy, yet the financial support given it was not such as would warrant it being continued unless at a loss. The old adage that "keeping everlastingly at it brings success" may be right, but another saying that "the wise man is he who knows when he has got enough" is equally true. In the case of The Pharmacologist, the publisher is inclined to believe that the void in medical journalism which he thought was aching to be filled did not really exist, and therefore there will be no further numbers of The Pharmacologist published. Unexpired subscriptions will be filled by The New Idea or the money will be refunded, as subscribers may choose."

Prof. Coblentz is getting a third edition of his Handbook on Pharmacy ready for the press.

The Open Court Publishing Company have now in press the Principles of Bacteriology, by Prof. Ferdinand Hueppe, of the University of Prague, translated by Prof. E. O. Jordan, of the University of Chicago. The German edition was reviewed in vol. 14, p. 282 of this journal. It treats its subjects as a connected science rather than as a collection of loose data; it explodes many popular and professional prejudices on the subject, and is especially strong on its philosophical side.

Persons interested in calcium carbide and acetylene gas will welcome the catalogue of the more important books and other contributions on these subjects compiled by W. H. Kuehl, a publisher of Berlin, which can be had for M. 0.20.

Students of the late Fresenius will be glad to learn that a history of the second quarter century of the existence of the chemical laboratory at Wiesbaden has been written by one of the sons of the founder of this institution, Prof. H. Fresenius. It is published by C. W. Kreidel of Wiesbaden. Apropos of this reference, it may be noticed that the third print of the sixth edition of Fresenius: Anleitung zur quantitativen chemischen Analyse has been struck off. The publishers of this standard text and reference book are Fr. Vieweg.

J. B. Baillière et Fils of Paris announce that they have under the press the work on L'opothérapie by Dr. P. Claisse. (See vol. 16, p. 275.)

Macmillan's December list contains the following scientific works: 1. Jones: An introduction to the science and practice of qualitative chemical analysis; 2. Rintoul: An introduc-

tion to practical physics for school use; 3. Card: Bush-fruits, one of the publisher's rural science series; 4. Thorp: Outlines of industrial chemistry; 5. Vines: An elementary textbook of botany.

The wellknown encyclopaedic handbook of technical chemistry, Muspratt's Chemie in Anwendung auf Künste und Gewerbe, is passing through its fourth edition. Six volumes are already complete and the seventh, beginning with pho-phorus, is under the press. This monumental work is published by Fr. Vieweg of Braunschweig.

Merck's 1899 manual of the materia medica together with a summary of therapeutic indications and a classification of medicaments, is a ready-reference pocket book for the physician and surgeon, and contains the names of chemicals and drugs usual in modern medical practice with their chief synonyms, also information concerning their physical form and appearance, solubilities, percentage strengths and physiological effects, therapeutic uses, modes of administration and application, regular and maximum dosage, incompatibles, antidotes etc. It is a *multum in parvo* which will not be apt to prove an encumbrance in the busy practitioner's pocket, but a welcome aid to his memory.

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Speyer & Peters — Berlin. Zeitschriften, Encyclopaedien und Sammelwerke aus den Gebieten der Medizin und der Naturwissenschaften. No. 5.

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Fritzsche Bros. — New York. Wholesale price-list, Jan. 1899.

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* Alex. J. Wedderburn of Washington, D. C., is Corresponding Secretary.

Pharmaceutical Review.

VOLUME 17. **MARCH, 1899.** NUMBER 3.

Editorial.

Of all the pharmaceutical societies on this continent, the American Pharmaceutical Association unquestionably possesses the greatest vitality. Fear has been expressed by some, that the organization of another national association, such as the N. A. R. D., will prove detrimental to the older association. Others again are of the opinion that the latter would be strengthened if matters purely commercial could be relegated to an organization consisting exclusively of retail druggists. The future alone will decide which view of the situation is correct. Whatever our personal views on this subject may be, we should all assist in strengthening the A. Ph. A. in whatever way we can. We call attention, therefore, to a circular issued by the Committee on Membership of the A. Ph. A. which will be found on another page (142) of this issue. There is no reason why the A. Ph. A. should not have a larger membership, but in securing new members let us invite persons whose membership we have fair reason to feel confident will be of lasting value to the association. A large number of members not in sympathy with the prime purposes of the A. Ph. A.—see extracts of constitution in the circular—might accomplish more harm than good.

The attention of those who hope to improve pharmacy by a division of the present calling into pharmacy proper and the drug-trade, has frequently been directed to the experience of European countries in which the experiment has been tried and found wanting. Fortunately this proposition is losing ground in this country, though it still finds an occasional advocate. It may be well, therefore, to call attention from time to time to European experiences. France has just abolished the grade of second class pharmacists

after many years of complaint on part of the first class representatives. In Germany, where the socialistic element of the Reichstag supports the druggist (second class), the apothecaries (first class) are constantly annoyed by illegal competition on the part of the druggist. An idea of the extent to which the violation of the laws is carried by the druggist may be obtained from a catalogue of offenses recently printed in the Pharmaceutische Zeitung. During the short period from July 1 to September 30, 248 drug stores and similar shops in Berlin were inspected and in not less than 139 contraband medicaments and poisons were found. Whereas most medicaments were found but once or at most several times, i. e. in several stores, some of the more popular household remedies were found more frequently. Thus rhubarb was found thirty-seven times, and compound licorice powder thirty-nine times. It requires but little imagination to picture to ourselves the lively competition future pharmacists of the first class would have to meet from their second class colleagues in a country where police control is so unsatisfactory as in our own.

Pharmaceutical colleges and the university schools of pharmacy have frequently been criticized for not giving more attention to the practical needs of the druggists. No one will claim that even the best of our educational institutions are above criticism, yet much of the criticism has been caused by a misunderstanding of the functions of these institutions and a lack of appreciation of what can be accomplished in a comparatively short time with students who, as a rule, have not the preparation necessary for a proper pursuance of their studies. It is much better to restrict the curriculum to a mastery of a few subjects, wherever this is possible, than to spread out over a greatly diversified field. At those institutions, however, which demand the entire time and attention of their students throughout the regular collegiate year, where most of the time of the students is spent in laboratories, lecture courses in branches not belonging to the natural sciences must of necessity constitute a valuable diversion.

Information that should prove exceedingly valuable to future druggists is a knowledge of the functions of the state in general and with reference to matters pharmaceutical in particular. Sound information about the rationality of patent- and trademark laws, about

the functions and limitations of the state in regard to specific pharmaceutical legislation etc., is something which the average druggist of this country does not possess. If he did, less time would be wasted at our pharmaceutical gatherings in discussing all sorts of impossible schemes.

For several years past some of our pharmaceutical colleges and schools have offered courses on law applied to the pharmacist. Prof. Beal e. g. has delivered such a course at different places. At several institutions lawyers were invited to give such a course. Two years ago Professor Gregory, Associate Dean of the College of Law, delivered a short course of lectures to the pharmaceutical students at the University of Wisconsin. Valuable as such a course must be, it was thought that it might be made even more valuable by preceding it by a course on the general functions of the state with special reference to pharmaceutical legislation and allied topics. During the past semester such a course was given by Dr. B. H. Meyer, a member of the instructional force of the School of Economics, Political Science and History. On page 141 a brief account of this course will be found. This course is now to be supplemented by Professor Gregory's course on Law applied to the pharmacist. Such instruction is not only interesting and valuable in itself, but it must ultimately prove of the greatest practical import. It is to be hoped that work of this nature will find favor in educational institutions wherever it is possible and where scarcity of time will not make it unprofitable.

Pharmaceutical Associations: Local, State and National.*

The idea of protection by organization is as old as civilization and older. Indeed we find it not only in man, but in many of the lower animals as well. The acme of this idea, however, seems to have been reserved for our day of extreme of specialization. Moreover the United States with its several races and numerous nationalities has produced causes for organization not only along the lines of the numerous callings, but within one and the same calling, differences in nationality have given cause for special organization. New York City, this modern Babel, has during the past year given us a glimpse of the possibilities along this line in our own calling.

* Compare commercial retrospect on p. 6 (Jan. number); also New tendencies in pharmaceutical science on p. 51 (Feb. number.)

Irrespective of nationality, the New York College of Pharmacy for many years was a cause for local organization of the druggists of that city. The German Apothecaries Society is possibly the only organization along national lines that has so far acquired prominence. We have been informed, however, that last fall an Italian Pharmaceutical Association of the United States* was organized in New York. It has also been intimated that a Jewish and a Chinese association were to be formed. New York state has long served as an illustration of what can be accomplished by a splitting of forces. It is to be hoped that the unedifying example of political strife and national differences may become sufficiently known to serve as discouragement to others who in their zeal to form independent local organizations are assisting in the disintegration of the pharmaceutical state.

The absolute necessity of **local organizations** is generally conceded by those who have given the subject of pharmaceutical organization serious thought and attention. In fact, many local organizations have accomplished what neither state nor national organization could ever hope to do. One of the dangers of local organization independent of the larger state organization has been illustrated in the state of New York which to-day has no uniform pharmacy law and several boards whose acts not infrequently conflict with each other. On the other hand many an independent local organization has lost its vitality because it had in itself not sufficient reason for existence to give it power to outlive long spells of inaction. We must have local organization, but local associations should be an organic part of the larger state associations. That the congressional district would afford a uniform unit for the entire United States was pointed out in a paper presented to the Am. Pharm. Assoc. last summer.†

At the St. Louis meeting of the N. A. R. D. all druggists' associations, whether local, state or national were entitled to representation. Let us suppose for a moment that another meeting were to be held at St. Louis or Chicago and that a question of grave import were to be decided. Every village or hamlet, every ward in Chicago or St. Louis might form a local organization; in some cities English, German, French, Irish, Italian, Norwegian, Russian etc. associa-

* Pharm. Era, 20, p. 614.
† Bulletin of Pharmacy, 12, p. 485; also Proc. A. Ph. A., 46, p. 552. A preliminary paper or report was presented at the Green Bay meeting of the W. P. A. 1897.

tions might be founded and each send its delegates. What chance would eastern delegates stand to secure just representation? None whatever. This picture may be overdrawn, yet any one who is at all familiar with the pharmaceutical history of New York does not have to stretch his imagination very much to picture to himself such a possibility. Our entire "system" of organization, local, state and national, like our "system of education" lacks in one important particular, viz. system.

With regard to our **state associations** there seems to have existed a rather general feeling of indifference in late years. Even such a live question as the war tax does not seem to have brought a large or even fair percentage of druggists to the annual meetings last year. A state with over 1500 registered pharmacists sent to the annual meeting of its state association which was held at a charming summer resort less than 50 druggists. State legislation, which at the beginning was the principle *raison d'être* of these organizations, fell short in its results of the expectations of many who sought protection under its wings. The disappointment led to the indifference since some years so characteristic of state association life. The officers of some of the associations tried to counteract this influence by drawing Tom, Dick and Harry to these meetings. The Review has frequently pointed to the disastrous effect of this policy and has been stigmatized as pessimistic for its views. It is gratifying, therefore, to see other journals use their influence in the attempt to correct present abuses. We may all recognize the importance of social features and delight in them if of a proper nature, but there is no reason "why the druggists should insist in making fools of themselves." These are the words of a traveling man, a representative of that class which is supposed to take particular delight in arranging the socalled "sports" for the benefit of their customers.

Under the caption of "Fun or mutual improvement", the editor of the Bulletin of Pharmacy* makes the following statement: "The congealed truth is, that State Association meetings as they are at present conducted and attended are an arrant humbug so far as being of practical value to a progressive pharmacist is concerned, and this fact is becoming more apparant each year to the thoughtful members, the number of which in attendance is steadily diminishing.

For this condition the members and the officers have themselves alone to blame, and with them is the remedy".

* Vol. 12, p. 385.

Under the somewhat startling headline—startling, however, to the uninitiated only — of "Mule races and scientific papers," the Pharmaceutical Era* makes the following editorial statement: "At a recent meeting of the Illinois Pharm. Ass'n. a number of interesting and valuable papers were presented. We are told, however, that when some of the best of these were under reading and discussion, the attendance was very small, from the fact that right outside the hotel a mule race was going on, attracting the attention of the audience and reducing it to a corporal's guard. Our informant believes that either the reading of papers at meetings or mule races should be dropped, as they do not agree, and it is hardly fair to ask men of prominence to prepare papers if mule races are the greater attraction. This little story points its own moral" ..... "Fun is all right and a good thing, but it is not the prime object of pharmaceutical associations, though some of these bodies apparently think it is, if we may judge from the very meagre business programme, and the long and complex entertainment list which they annually present to attract a large number of delegates."

If these two specimens of editorial comment are to be characteristic of the treatment which the "Missouri idea" or its outgrowth is to receive from the pharmaceutical press, the Review can well afford to remain relatively quiet on this subject hereafter. Let us hope that the officers of our state associations will realize the annomalous situation at present occupied by these societies. Let them exert themselves to redeem our state associations from being objects of disgust in the eyes even of those who assist in thus amusing the druggists. It is easy to destroy the reputation of a calling, but exceedingly difficult to build it up.

The past year has witnessed the creation of another **national organization.** The American Pharmaceutical Association has for many years represented the scientific and professional aspects of pharmacy in all their branches. In it the retailer and wholesaler, the college professor and the manufacturer and last, but possibly not least, the pharmaceutical journalist meet on equal footing. Although commercial matters have always received respectful consideration, the various visonary schemes and ideas which have found favor here or there were as a rule met with a conservatism that much displeased the commercial schemers. Last year the Commercial Section was

* Vol. 19, p. 934.

thoroughly roused by an energetic chairman who has no use for pharmaceutical trusts and the like. He received the just praise due him and created an intense enthusiasm for the time being, but the work he did was not of the kind so many have been clamoring for. It, therefore, in no way could prevent the formation of an organization of the retail druggists at St. Louis last fall, known as the National Association of Retail Druggists and corresponding to the association of the wholesale druggists which met at the same time and place.

The displeasure manifested on the part of many retail druggists toward the Am. Pharm. Ass'n. was so great that some of the journals thought it wise to rebuke the college professor for his interest in science. The enthusiasm which attended the organization of the new association was such that many journals thought it necessary to demonstrate a greater friendship for the new movement than their rivals by all sorts of flattering editorial remarks. Of the few journals, whose editors did not lose their head, and who revealed a true friendship by a rational conservatism rather than by flattery, the Era* called attention to the lessons which the organizers of this new movement should learn from the experience of similar ventures that have failed within comparatively recent years. Mr. Jacobs, Chairman of the Commercial Section of the A. Ph. A., has also spoken boldly† in pointing out that pharmaceutical protection by trusts, a favorite idea of many organizers, will never meet with the approval of the American people. There ought to be a sphere of proper activity for the N. A. R. D., but this must not conflict with economic progress if the association is to be permanently successful. Possibly the greatest success this new association has to record thus far is the new impetus it has given to local organization and a more genuine feeling of fraternity among the druggists. We hope that in this particular it may be even more successful in the future. On the whole, our experience in association life during the year 1898 ought to give us much food for reflection. Let us be optimistic rather than pessimistic in judging the shortcomings, let us hope that the low water mark of association life has been reached and that the renewed enthusiasm may lead to a new, healthy life. The activity of associations for this year is soon to begin. Now is the time not only to make good resolutions, but to act. *E. K.*

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* Vol. 20, p. 557.
† Merck's Report, 7, p. 763.

Review of Investigations on Essential Oils during the Year 1898.

By *Clemens Kleber.*

On a considerable number of researches on essential oils this journal has already furnished reports during the past year; we, therefore, can restrict ourselves here to give only a brief enumeration of the corresponding articles in this journal.

Oil of Caparrapi. By F. B. Tapia. Description and composition of the oil.[1]

Oil of Cedar Leaves. Characteristics and chemical composition.[2]

Oil of Citronella. An inspection trip of the citronella plantations in Ceylon; characteristics of the various oils.[3]

Oil of Eucalyptus. Various new oils.[4]

Oil of Gaultheria. By J. U. Lloyd. The early history of this oil in medicine and pharmacy.[5]

Geraniol. A controversy between various authors about the names geraniol or rhodinol.[6]

Oil of Guaiacum Wood. Its botanical origin.[7] Properties and uses.[8]

Oil of Lavender from *Lavendula pedunculata.* Description and composition of the oil.[9]

Oil of Liquidambar Styraciflua (Sweet Gum). Properties and chemical composition.[10]

Oil of Lophanthus Anisatus. Description of the oil.[11]

Oil of Matico Leaves. Its varying composition.[12]

Oil of Mentha Canadensis. By Florence M. Gage. Composition.[13]

Methyl Salicylate. By Dr. van Romburgh. Its wide distribution in the vegetable world.[14]

Oil of Orange from Jamaica.[15]

Oil of Pycnanthemum lanceolatum. By F. W. Alden. Its composition.[16]

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[1] Pharm. Rev., vol. 17, p. 19.
[2] Ibidem, vol. 16, p. 309.
[3] do., vol. 16, Suppl. p. 94.
[4] do., vol. 17. p. 20.
[5] do., vol. 16, p. 176.
[6] do., vol. 16, p. 310.
[7] do., vol. 16, p. 310.
[8] do., vol. 17, p. 21.
[9] do., vol. 17, p. 21.
[10] do., vol. 16, p. 240.
[11] do., vol. 16, p. 240.
[12] do., vol. 17, p. 22.
[13] do., vol. 16, p. 414.
[14] do., vol. 17, p. 77.
[15] do., vol. 16, p. 240.
[16] do., vol. 16, p. 414.

Duyk has continued his abstracts on the chemical and industrial aspects of volatile oils.[17] The compilation contains, however, numerous errors.

Of other reports and investigations on essential oils the following ones deserve to be mentioned:

Oil of Angostura bark. In this oil (from *Cusparia trifoliata* Engler; *Galipea officinalis* Hancock) H. Beckurts and J. Troeger found a small quantity of a terpene, probably pinene, a laevogyrate sesquiterpene, apparently cadinene, an inactive sesquiterpene which the authors call galipene, and a sesquiterpene hydrate which has been named galipol. Some of these constituents are very apt to become inverted by heat, so that the originally laevorotatory oil (Rot. 100 mm. = −43 to −50°) assumes a dextrorotation by mere heating.[18]

Oil of Basilicum, French. Dupont and Guerlain stated that this oil contains about 60 p. c. of l-linalool and some methyl-chavicol (estragol), whereas basilicum oil from Réunion proved to contain no linalool at all, but about 60 p. c. of methyl-chavicol.[19] This result was confirmed by Bertram and Walbaum who also found in the Réunion oil some d-pinene, cineol and d-camphor. German basilicum oil also contains, after the same authors, linalool. Perhaps the Réunion plants belong to a different species, while those cultivated in Europe are undoubtedly *Ocymum basilicum* L.[20]

Oil of Camphor, light. With regard to the present high prices of oil of turpentine, Schimmel & Co. recommended the use of white camphor oil instead of the former as a solvent for resins, rubber, etc., especially as it has the advantage of being less inflammable (flashing point 44.5° against 33.7° C. for oil of turpentine).[21]

Dill Oil. J. C. Umney points to the difference between European and Indian dill oil the latter of which has a materially higher specific gravity, about 0.95 to 0.97, due to the presence of an isomer of apiol, the nature of which has been elucidated by the investigations of Favre and Silbermann. Perhaps the Indian dill forms a different species, though Flückiger and Hanbury could not detect any striking botanical differences.[22] In contradiction with the assertion of the same author, that dill oil with a specific gravity below

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[17] do. 1898, vol. 16, p. 342.
[18] Arch. Pharm. 235, pp. 578 and 634; ib. 236, pp. 392 and 401.
[19] Bull. soc. chim. (3) 19, p. 151.
[20] Schimmel's Report Apr. 1898, p. 9.
[21] Schimmel's Report Oct. 1898, p. 7.
[22] Pharm. Journ. 61, p. 176.

0.91 is decarvonized. Schimmel & Co. prove from the record of their own distillations that it may occasionally have a spec. grav. even as low as 0.899.

Oil of Geranium. J. Flatau and H. Labbé described a new method for the separation of geraniol and citronellol by means of the crystallizable geranyl-phtalic-acid-ester. By this method they found in Indian geranium oil 63 p. c. geraniol and 17 p. c. citronellol, in Bourbon geranium oil 70 p. c. citronellal and 10 p. c. geraniol: citronella oil 40 p. c. geraniol and 6 p. c. citronellol etc.[23] Schimmel & Co. remark that according to their own experience this method can serve for the preparation of pure geraniol, but that it is not available for exact analyses as the citronellol thus obtained always contains geraniol, owing to the solubility of its phtalic ester in the citronellol compound.[24]

Oil of Lemon. Umney and Swinton believed to have found geranyl acetate in this oil.[25] Schimmel & Co. however express some doubt about the correctness of this result as the analytical methods of the latter authors would not exclude the secondary formation of this body, even if the same had been more positively identified than it has been the case.[26]

Oil of Lemongrass. About the constituents of this oil a live controversy has arisen. As is so well known, the aldehyde obtainable from this oil, hitherto named citral, forms the base for the manufacture of the valuable odorous principle ionone. Now W. Stiehl claims to have found in oil of lemongrass three different aldehydes $C_{10}H_{16}O$, namely citral, citriodoraldehyde and allo-lemonal, each of which is available for a different "violet oil" product for which patents have been taken out. So far as we can see his results have not been confirmed by any of the later investigators. For those interested in the matter we refer to the following literature: F. Tiemann: Ber. 31, p. 808: Ziegler: Journ. pract. Chem. 57, p. 490: Doebner: Ber. 31, p. 1888; Stiehl: Journ. pract. Chem. 58, p. 51: Semmler: Ger. 31, p. 3001: Tiemann: Ber. 31, pp. 3278. 3297, 3324.

Oil of Marjoran. As constituents of this oil W. Biltz has found terpinene and d-terpineol.[27]

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[23] Compt. rend. 126, p. 1725.
[24] Schimmel's Rep. Oct. 1898, p. 67.
[25] Pharm. J. 61, p. 196.
[26] Schimmel's Rep. Oct. 1898, p. 23.
[27] Inaug. Diss. Greifswald 1898.

Oil of Melissa contains according to J. Flatau and H. Labbé 6 p. c. of citronellal 20 p. c. geraniol and 12 p. c. linalool.[28]

Oils of Neroli and of Petitgrains. According to E. Charabot and L. Pillet genuine oil of neroli has a spec. grav. of 0.872—0.876 at 15°; that of petitgrain oil is 0.891 to 0.894. Neroli oil is dextrorotatory (+1.°42 to +4.°06) petitgrain oil laevorotatory (—4.°45 to —6°15). Calculated as linalyl acetate, neroli oil contains 10 to 20 p. c. of ester, petitgrain oil 50 to 70 p. c. Both oils seem to contain the same alcohols, linalool and perhaps some geraniol, but probably combined with different acids.[29]

Oil of Peppermint, French. Eugene Charabot has observed that French oil of peppermint differs materially from the American, English or Japanese oils: its specific gravity at 18°C. being 0.918 to 0.921, opt. rot. — 5°54′ to — 706′, percentage of menthyl ester 7.1 to 10.0, of menthone 8.8 to 9.6, total menthol 43.7 to 46.0. Oil from so-called *menthe basiliquée*, a degeneration of the plant caused by the sting of an insect, is of much deteriorated quality, dextrorotatory (+70) and shows a decrease in percentage of menthol and menthone.[30]

Oil of Rose. According to F. Dietze genuine rose oil should have a spec. grav. not above 0.87 at 15°C., congealing point not lower than 15 to 20°, opt. rot. not over—1°30′, saponification number not over 9.5 to 10, proportion between ester and acid number not higher than 7.[31] P. N. Raikow found, however, that perfectly pure rose oils may differ considerably from this assumed standard: regarding his numerous figures we must, however, refer to the original.[32]

Oil of Savin. This oil contains, after E. Fromm, pinene and probably cadinene, besides this an acetate from which by saponification an alcohol, sabinol, of the formula $C_{10}H_{16}O$ (not $C_{10}H_{18}O$ as stated by Schimmel & Co.) is obtained. This alcohol forms an oil of weak but agreeable odor, boiling point 208—209°. By permanganate it is oxydized to α-tanacetogenic acid.[33]

Laboratory of Fritzsche Bros.

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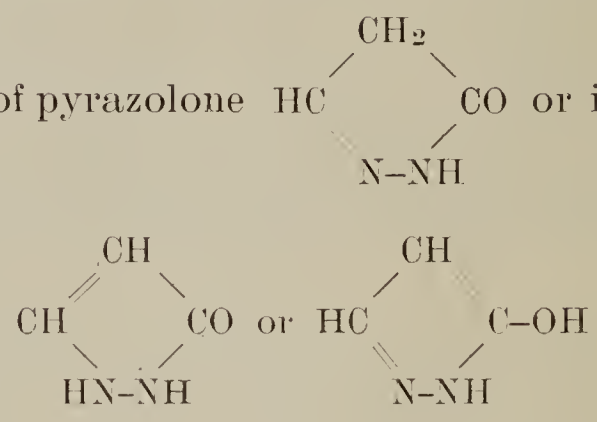
[28] Bull. Soc. Chim. 3. 19. p. 636.
[29] Bull. Soc. Chem. 3. 19. p. 853.
[30] Bull. soc. chim. 3. 19. p. 117.
[31] Süddeutsche Apothek. Zeitg., No. 89.
[32] Chem. Zeitg. 22. p. 149.
[33] Ber. 31. 2025.

Pharmacology and Toxicology of the Pyrazole Derivatives.

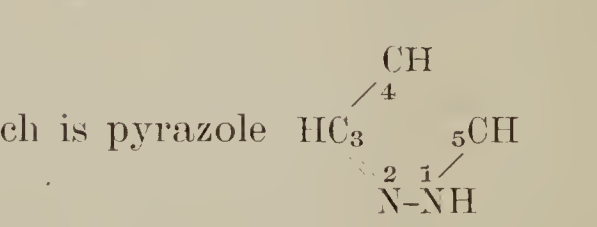
By *Virgil Coblentz.*

Dr. G. Cohn gives an interesting review of this series of antipyretics in the Pharm. Centralhalle of Dec. 15, 1898. A resume of the subject with some additions and explanations is offered in the following.

The first pyrazole derivative was prepared in 1883 by Knorr under the title of antipyrine. Since that time the various derivatives of this nucleus have received such attention that to-day they number far over 1000. Those of therapeutic value are direct derivatives, with but few exceptions, of pyrazolone



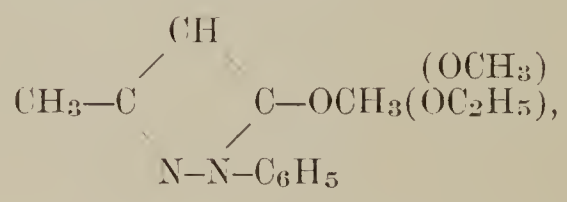
or its tautomeric forms



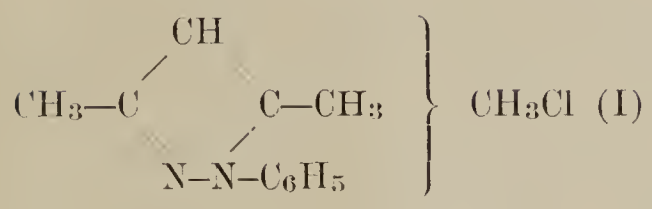
The nucleus of which is pyrazole

The methyl (3) derivative of this possesses local anæsthetic properties, exerting at the same time an irritant action upon the skin.

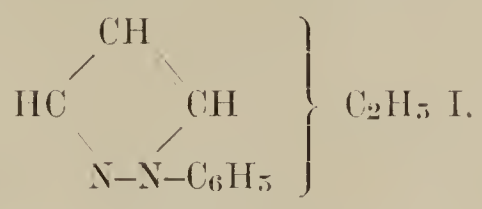
The alkyl-oxy-pyrazole derivatives, as for example



1-phenyl-3-methyl-5-methoxy-pyrazole or ethoxy-pyrazole, one of which has the same elementary composition as antipyrine, possess no antipyretic action, but resemble pyrazole alone in their effect upon the system. The chloro- and iodo-methylate of 1 phenyl-3, 5-dimethyl-pyrazole



paralyse the cerebral centres without disturbing the heart. On guinea pigs they cause well developed symptoms of dyspnea, cramps and paralysis, death following through cessation of respiration while the heart continues to beat a while longer. Of like deportment is the ethyl-iodo derivative of phenyl-pyrazole



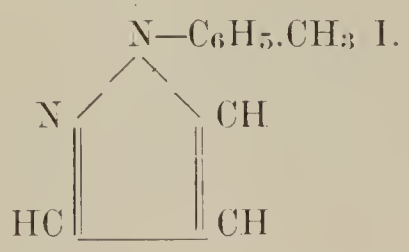
which like curarine first paralyses the periferal nerve terminals and later the nerve centres without altering muscular irritability. The temperature is increased at first, but later depressed. Warm blooded animals die of respiratory paralysis. The poison raises the arterial pressure by stimulating the vasomotor centres to be lowered again later.

Similar but feebler effects are caused by 1-phenyl-3, 5-di-methyl-pyrazole.

Much less toxic are 1–phenyl–3–carboxyl–5–methyl-pyrazole and phenyl-pyrazole-carboxylic acid; these examples serve to substantiate the rule that the introduction of carboxyl groups materially reduce the intensity of physiological action.

1-Phenyl-3-carboxylic-5-methyl pyrazole causes diuresis by directly influencing the renal secretions in doses of 1 to 2 gm.

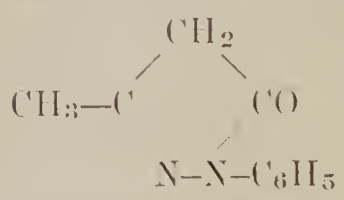
The iodo-methyl derivative of phenyl-pyrazole (known as Mydrol) possesses mydriatic properties.



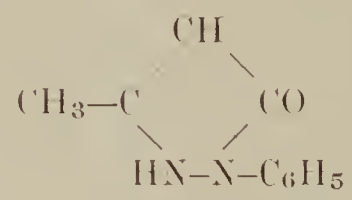
It also (taken internally) paralyses the nerve terminals in the frog's heart especially, the intercardiac inhibitory gangalia bringing the cardiac muscles in systole. In warm blooded animals mydrol causes slight reduction in the frequency of the pulse which also takes place

in atropinized animals; in addition a marked increase of the blood pressure takes place, even after severing the spinal cord. Mydrol is not diuretic nor does it influence temperature, but passes off unchanged in the urine. The application of a 5 to 10 p. c. solution causes in animals with round pupil mydriasis accompanied by a slight contraction of the conjunctival vessels. Mydriasis begins first about 40 minutes after application, the effect diminishing rapidly without any signs of irritation.

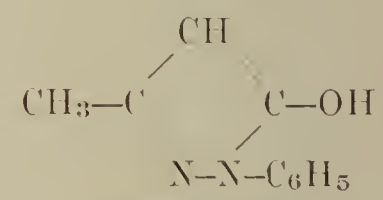
As is well known, 1-phenyl-3-methyl-pyrazolone assumes various tautomeric forms, as:



Methylene type.



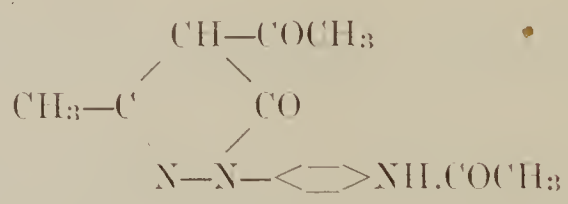
Imine type.



Phenol type.

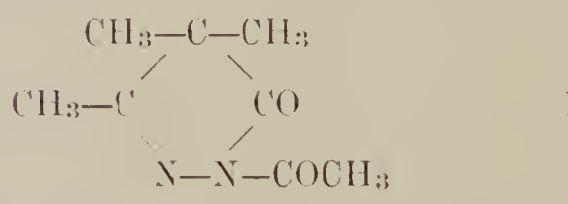
Derivatives of the phenol type, as the alkyl-oxy-pyrazoles, have already been cited, but only those of the methylene and imine type yield antipyretic derivatives.

Among those derivatives may be cited: phenyl-methyl-pyrazolone itself, then



1-Acetyl amido-phenyl-3-methyl-4-acetyl pyrazolone.

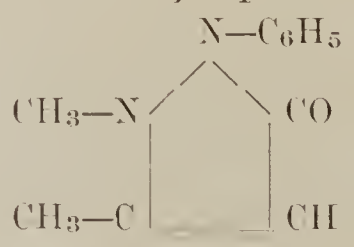
also



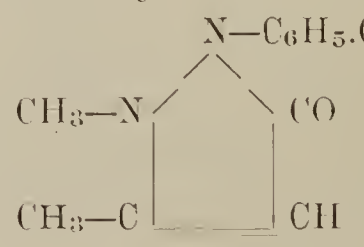
1-Acetyl-3, 4-trimethyl-pyrazolone.

This latter body reduces temperature although no phenyl group is present. The acetyl group may be replaced by various other acid radicles yielding likewise antipyretics.

To the imine type, antipyrine and its derivatives belong. Tussol, an antipyrine mandelate, possesses not only antipyretic, but also slight narcotic properties. It is a very useful remedy in the



Antipyrine.



Tussol.

treatment of whooping cough, diminishing the violence and number of attacks.

Resalgine ($C_{11}H_{12}N_2O.C_6H_3$-$(OH)_2COOH$) or beta-resorcylate of antipyrine is classed among the antiseptics. Among some of the later combinations we have the antipyrine valerate, salicylo-acetate and the double salt of the valerate of quinine and antipyrine.

Perhaps the most successful combination is the salipyrine or antipyrine salicylate ($C_{11}H_{12}N_2O.C_6H_4(OH)COOH$), which has proven itself to be a specific in muscular rheumatism, acute or chronic.

Antipyrine likewise unites with mono- or di-hydric phenols to form saline bodies, as for example: phenopyrine, naphthopyrine, resopyrine, pyrogallopyrine, etc.; these being chiefly employed as antiseptics. Antipyrine readily forms additive compounds with ferric chloride, chloral, etc.; the first named combination is known as ferripyrine $(C_{11}H_{12}N_2O)_3Fe_2Cl_6$ and is found by adding alcoholic ferric chloride to an etherral solution of antipyrine. The therapeutic value of ferripyrine combines the styptic and tonic properties of the iron, without being irritable, and the sedative characters of antipyrine. It is therefore of value in treatment of neuralgia, gastralgia and headaches of enemic and chlorotic persons, also as a hemostatic in nasal affections, in inoperable freely bleeding and profusely secreting cancer and hematorrhea. Tampons covered with the dry powder are of value in relieving the pain and stopping the flow of blood after the extraction of teeth.

Antipyrine unites readily with one and two molecules of chloral hydrate, the combination being brought about by triturating molecular quantities of both. Thus we have mono-chloral antipyrine or hypnal $C_{11}H_{12}N_2O.CCl_3.CH(OH)_2$, also a di-chloral antipyrine $(C_{11}H_{12}N_2O.(CCl_3CH(OH)_2)_2$, and finally a butyl hypnal which is a combination of butyl-chloral and antipyrine ($C_{11}H_{12}N_2O.C_4H_5Cl_3O.H_2O$). All of these combinations possess hypnotic and analgesic action.

The Letter A: its Meaning in Pharmaceutical Literature.

By *Edward Kremers.*

Pharmaceutical literature, as well as the literature of related sciences and arts, frequently contains abbreviations, symbols or signs, the meaning of which does not always lie at the surface. Not only does the general reader encounter this difficulty, but even the specialist not infrequently encounters problems that are not easy of satisfactory interpretation, problems for the solution of which he knows not where to turn.

In presenting this list, which covers only the letter "a", the writer is aware that it is anything but complete. Inasmuch, however, as dictionaries have not given this subject that attention which it deserves, the publication of this preliminary list calls for no apology. The writer hopes that those who have realized the importance of a complete list of this kind will kindly inform him of such omissions as they may notice, and also call attention to errors wherever they may occur.

It was thought desirable in this list to classify the different abbreviations etc. with references to the sciences etc. in which they are employed rather than to follow the plan of a dictionary. Some of the usages here recorded have but an historic interest. It may be of some value, however, to note the changes in usage that have taken place in the course of time. This ought to be true especially at present where interest in historic scientific subjects is enjoying an almost universal revival.

Of purely philological significance is the use of the letter

a. (before vowel sounds and initial h, **an**) in Greek derivatives when used as a prefix with negative or privative force. As *a*-septic, not septic; *an*-hydrous, without water; *azote*,[1] the French word for nitrogen.

In **Pharmacy,** one of the oldest uses of the letter a as an abbreviation is customary in prescription writing and is written with a variety of slight modifications:

[1] Lavoisier: Traité élémentaire de chimie 3rd ed. (1801). p. 55: "Les propriétés chimiques de la partie non-respirable de l'air de l'atmosphère n'étant pas encore très-bien connues, nous nous sommes contentés de déduire le nom de sa base de la propriété qu'a ce gaz de priver de la vie les animaux qui le respirent; nous l'avons donc nommé azote, de l' *α* privatif des Grecs, et de *ζωὴ*, vie, ainsi la partie non-respirable de l'air sera le gaz azotique."

$\overline{a}$[2], **$\widehat{a}$**[3], **$\bar{a}\bar{a}$**[4], **$\bar{a}a$**[5], **aa**[6], **$\overline{aa}$**[7], **$\widehat{aa}$**[8], **$\widehat{\bar{a}a}$**[9], abbreviations for *ana*, the Latinized form of the Greek preposition *ἀνά*, whose fundamental meaning is up (as e. g. in anabasis), but which is also used in a distributive sense meaning at (so much each). In the latter sense it is also used in prescription writing, viz. to indicate an equal quantity of each, e. g.:

℞

Pulveris opii,
Ipecacuanhae pulv.,
$\bar{a}\bar{a}$ grammum 1.0
Saccharai lactis, grammata 8.0
M. Ft. in pulveres No. 10.

The Century Dictionary also gives a possible clue as to the origin of the various abbreviations enumerated above. It states that *ana* is often written witnout the *n*, viz. *ān̄ā*, and that earlier it was more correctly written *āa*, where the mark above the first *a*, according to general medieval practice, represented the omission of *n*. It requires but little imagination to suppose that the macron ¯ may incidentally have been displaced by another diacritic mark, the tilde ~ etc. This, however, is but mere supposition. A study of old and modern pharmaceutical and medical works with reference to these changes would, no doubt, be of interest.

Berendes[10] in referring to the Koptic papyrus 8318 of the Royal Museum at Berlin as an authority for the explanation that the name Hermes trismegistos is a translation of the Egyptian expression *dubit aā aā* (Thot, gross gross), incidentally brings out the use of *aā* evidently as a sign of repetition.

A fictitious derivation, which, however, is not devoid of historical interest, is given by Joh. Mich. Moscherosch[11] in his "Wunderliche und wahrhaftige Gesichte Philanders von Sittewalt," a work which is of great importance to students of the history of civilization during that period when Germany was almost wiped off the European con-

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2 James: Medical Dictionary; Motherby: Medical Dictionary.
3 Mérat: Dict. universelle de M. M.
4 Realencyclopædie d. gesamten Pharmacie; Nysten: Dict. de Méd.; Mérat: Dict. universelle de M. M.; Century Dictionary.
5 Cent. Dict.
6 Medical dictionaries of Gould, James and Motherby.
7 Schulze: Pharmaceutische Synonyma.
8 Realencyclopædie d. gesamten Pharmacie; Hager: Techn. d. pharm. Receptur.
9 Mérat: Dict. universelle de M. M.
10 Geschichte der Pharmazie, p. 24.
11 Kürschner's National-Litteratur, vol. 32.

tinent, viz. during the thirty-years war. The apothecaries[12] come in for their share of criticism and satire. He not only compares the apothecary shop with an arsenal and the mortars, pills etc. with implements of war; but calls the shop a veritable hell, the patients are the poor, condemned souls, while the barbers are the devils. This brief introduction may prepare the reader for the following derivation of the word ana. "Furthermore Ana, which word comes to us from the French, and is derived from *Asne* or *Ane*, ass; or rather from Ana, the son of Zibeon who found the mules while herding his father's asses in the wilderness: for it requires but a single incompetent ass to deprive an honest man of health and life."

The play of words is based on Genesis 36, 24: "Die Kinder von Zibeon waren: Ajja und Ana. Das ist der Ana, der in der Wüste Maulpferde erfand, da er seines Vaters Zibeons Esel hütete." The authorized (English) version is the same as Luther's translation, viz.: "And these are the children of Zibeon: both Ajah, and Anah; this was Anah that found the mules in the wilderness, as he fed the asses of Zibeon his father." The keen edge of the sarcasm is, however, lost in the revised version: "And these are the children of Zibeon; Aiah and Anah: this is Anah who found the hot springs in the wilderness, as he fed the asses of Zibeon his father." A third rendering for the Hebrew word translated "Maulpferde" by Luther and "mules" in the A. V. is given by Smith in his Dictionary of the Bible under the prime Zibeon, viz.: giants.

It is also used as part of the following phrase:

āā p. ae.[13], as abbreviation for the Latin *ana partes aequales*, meaning of each equal parts. This is also used in prescription writing and in formularies, e. g.:

℞

Tinct. Arnicae
Alcoholis
Glycerini
——
āā p. ae.

M. Sig.: Apply as directed.

a, Abbreviation also used in prescription writing, for *ars*, Lat. for art, and the several forms of its declension, e. g. l. a. = *lege artis*, according to the rules of the art; f. l. a. = *fiat lege artis*, it be

[12] See Peters: Aus pharmaceutischer Vorzeit [I], I, p. 64.
[13] James: Med. Dict.

made (according to) the rules of the art; s. a.=*secundum artem*, according to (the rules of the) art, Ger. *kunstgemaess.*[14] Notice also the abbreviation "A" for the genitive plural in A. B. and A. M. in the paragraph on degrees.

A. c., abbreviation used in prescriptions and in general medicine for *ante cibum*, before meals.[15]

The letter "a" also occurs as abbreviation in the names of several preparations, namely:

A. C. E. (Anæsthetic) Mixture. A mixture, named after the initial letters of its constituents, of 1, 2 and 3 parts by volume respectively of alcohol (0.838 or 0.895), chloroform (1.497) and ether (0.735 or 0.720). The stronger alcohol and ether are said to be preferable.[16]

A.B.C.-Liniment, so-called after the initial letters of the three first-mentioned ingredients. It contains liniment of **a**conite, 5½ fl. oz.; liniment of **b**elladonna, 5½ fl. oz.; **c**hloroform, 2¾ fl. oz.; camphor, 288 grs.; glycerin 2¼ fl. oz.[17]

In several instances the derivation is not so apparent, e. g.:

A-b-c-Balsam, a popular German name for *Unguentum Elemi*[18], and **A-b-c-Salbe**[18], a popular German name for *Unguentum flavum.* Possibly the formulas for the obsolete ointments which have been displaced in modern practice by *Ung. Elemi* and *Ung. flavum* may throw some light upon the derivation of these terms.

In the case of

A-b-c-Kraut[19], also **A-b-c-Pflanze**[20], popular German synonyms, like the French *abcdaire* (*abécédaire*), also Latin *abcdaria*, for *Acmella mauritiana* Rich., *Verbesina abcdaria* Rumph., a relation between this and similar terms at least becomes apparent. Tschirch states that it is so called because it is said to be used on the island of Ternate, one of the Molucca islands in the Malay Archipelago, to assist children in learning to speak.

In **Chemistry** the letter "a" as abbreviation or symbol finds even wider application. 1) In the following instances it is applied to substances: Possibly one of the oldest is

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14 Buchner: Einleitung in die Pharmacie (1822), pp. 350 & 351.
15 Gould: Medical Dictionary.
16 Am. Jour. Pharm. 67, p. 328.
17 Formula according to Ebert and Hiss: The Standard Formulary, p. 109.
18 Realencyclopædie etc., 1, p. 2.
19 ibidem, 1, p. 2.
20 do., 1, p. 96.

$\bar{a}\bar{a}\bar{a}$[21], ***aaa***[22], **A**[23], **AA**[24], **AAA**[25], **A.A.A.**[26], obsolete chemical abbreviations for *amalgama*, amalgam. They are also used for amalgamate and amalgamation.

▽, (*albumine*), Ⓐ, (*argent*), ◈, (*alcohol*), chemical symbols according to Adet and Hassenfratz[27]; the inverted triangle, the circle and the diamond being the general symbols respectively for weak bases, metals and substances of undetermined constitution.

$\bar{A}$, chemical symbol used formerly for acetic acid. More recently it is used for any monobasic organic acid radicle, especially when by its use the frequent repetition of writing the formula of the same radicle in the same paragraph can be avoided. The small letter "a" with the negative sign, which is to indicate the acid character of the substance designated by the symbol, $\bar{a}$ has also been used, similar to the use of ba in place of Ba, which is to represent the smallest equivalent, not an atom, of barium, e. g. in Pb $(\bar{a})_2$.[28]

Besides the obsolete usage referred to above, the plain capital A is used in a variety of ways.

A. 1) As an abbreviation for alcohol regularly used e. g. in the abstracts of the Chemisches Centralblatt.[29] Other abbreviations are also used, e. g. Al.[30], Alc., etc.

2) As abbreviation for atomic weight.[31]

3) Symbol for argon.

4) As a means of distinguishing one compound from another known by the same name, e. g. eucaine A and eucaine B. Compare similar usage of Greek letter *α*.

In 1896 the Schering Chemical Works introduced n-methyl-benzoyl-tetramethyl-γ-oxypiperidine carbonic acid methyl ester as eucaine. The trade name was evidently derived from the fact that like cocaine it possessed anæsthetic properties. While seeking a substance that should be free from some of the undesirable properties possessed by eucaine, the same firm discovered a compound related to eucaine, cocaine and especially tropa-cocaine, but much less toxic

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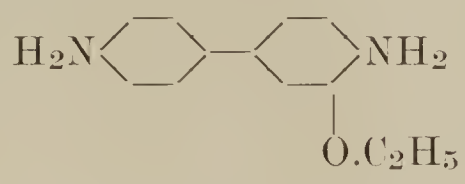
21 Gould: Med. Dict.
22 Schulze: Pharm. Synonyma.
23 Gould: Med. Dict.; Trommsdorff: Die Apothekerkunst; Dict. universelle du dix-neuvième siècle, 1, p. 2; Schulze: Pharm. Synonyma.
24 Dict. universelle, etc.
25 ibidem.
26 James: Med. Dict.
27 J. Persoz: Introduction à l'étude de la chimie moléculaire (1839), p. 52.
28 Schweiz. Wochenschr. f. Chem. u. Pharm. 36, p. 426.
29 See e. g. list of abbreviations: 1897 I No. 22, cover.
30 Chemiker Kalender.
31 Preyer: Das genetische System der Elemente, p. 52.

than the last named compound. This new local anæsthetic, benzoyl-vinyldiacetonealkamine, was introduced into materia medica under the trade name eucaine "B". In order to prevent confusion, the older eucaine was thereafter designated eucaine "A". The first article concerning eucaine "B" was published early in 1897, which seems to be approximately the date of distinction between eucaine "A" and "B".

Ä, abbreviation for ether (German, *Aether*), regularly used e. g. in the abstracts of the Chemisches Centralblatt.[32]

AB. In treatises on dyestuffs and as abbreviation for the radicle of

(a)ethoxybenzidine[33] 

To indicate the position of a radicle or otherwise to define structurally the character of a compound, the Latin a and the Greek α (alpha) are frequently employed.

α. In connection with chain compounds, such as hydroxy acids, amido acids, keto acids, hydroxy aldehydes, nitriles, etc., the position α refers to the carbon atom next to carbon atom of the group which characterizes the compound generically, e. g. in propionic acid, $CH_3\,CH_2\,COOH$. α-Lactic acid is α-hydroxy propionic acid $CH_3\,\underset{OH}{\overset{\beta\quad\alpha}{CH}}\,COOH$; pyruvic acid is α-keto propionic acid, $CH_3\,CO\,COOH$; atropic acid is α-phenyl acrylic acid, $CH_2:\underset{C_6H_5}{C}\text{–}COOH$.

α. Sometimes it is advisable to select as initial group one not at the end of a chain formula. Then there may be an α' position as well as an α position, e. g. in acetone dicarbonic acid ester $COO\,C_2H_5.\,\underset{\alpha}{CH_2}\,CO\,\underset{\alpha'}{CH_2}\,COO\,C_2H_5$.

$\alpha\,\alpha'$ Dimethyl acetone dicarbonic acid ester[34] will have the formula $COO\,C_2H_5.\,\underset{\alpha}{CH(CH_3)}\,CO\,\underset{\alpha'}{CH(CH_3)}\,COOC_2H_5$ and will differ accordingly from the $\alpha\alpha$ dimethyl derivative having the formula $COO\,C_2H_5.\,\underset{\alpha}{C(CH_3)_2}\,CO\,CH_2\,COOC_2H_5$.

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[32] See e. g. list of abbreviations: 1897 I, No. 22, cover.
[33] Schultz & Julius: Kuenstliche organische Farbstoffe.
[34] Annalen 261, p. 182.

(To be continued.)

MONTHLY REVIEW.

Chemistry.

Upon the Solubility of Coniine in Carbon Disulphide. — H. Melzer calls attention to the fact that the statement made by Blyth, (Annalen d. Chemie, 70, 77.) that coniine is slightly soluble in carbon disulphide, has been repeated in text books over and over again and has never been disputed. He finds that when coniine is mixed with carbon disulphide, it forms coniylthiocarbamate of coniine, $C_5H_9(C_3H_7)NCS.SH.C_5H_9(C_3H_7)NH$, and that therefore we cannot speak of the solubility of coniine in carbon disulphide at all. The compound produced is distinctly crystalline and can be obtained in the pure state only with the greatest difficulty. Weak alkali decomposes it with formation of free coniine.

When hydrogen sulphide gas is passed into a solution of coniine in absolute ether great quantities of minute needle-like crystals are formed which are very hygroscopic. The author did not study this compound any further.

[Arch. d. Pharm. 236, p. 701.] *J. O. S.*

The Detection of Saccharose in Wines, Liquors, Confections, etc. — G. Papasogli gives the following new test for the detection of saccharose: The solution under examination is decolorized with lead acetate and the filtrate treated with 0.5 cc. of a 5 percent cobalt nitrate solution and 2 cc. of a 50 percent sodium hydrate solution. If saccharose is present an amythist-violet color is developed which is permanent. Glucose, under similar conditions, gives a blue coloration which rapidly loses in intensity and passes into green. If both glucose and saccharose are present the first will not interfere with the detection of the second. Neither was glycerin found to interfere. Dextrin and gum arabic give a permanent blue color and must be removed with basic lead acetate before sugar can be detected.

[Chem. Centralbl. 1898, II, p. 991; from L'Orosi 21, p. 263.] *W. A. P.*

The Identification of Manganese. — Dioscoride Vitali suggests a new test of identity for manganese. Instead of depending upon the formation of permanganic acid by treatment with plumbic dioxide and nitric acid, the author dissolves the manganous compound in dilute sulphuric acid and adds to the cold solution a small crystal of pure potassium bromate. The solution is colored red-violet in the cold, the tint becoming more intense if allowed to stand for some time. The coloration no doubt is due to formation of permanganate. Neither potassium chlorate nor iodate can replace the bromate in this test.

[Centralbl. 1898, II, p. 942; from Boll. Chim. Farm. 37, p. 545.] *W. A. P.*

The Estimation of Bismuth in Bismuth Iodide. — O. Spindler determined the composition of bismuth iodide and employed the following method

for the estimation of iodine content. A weighed quantity of the substance, contained in a separatory funnel is extracted with a few drops of water and then treated with a solution of ferric chloride; this results in the formation of bismuth chloride and the liberation of iodine. The mixture is now extracted with small portions of chloroform until all iodine has been removed and the watery solution is colorless. The chloroformic extracts should be received in a glass stoppered flask containing a little water, which dissolves the bismuth chloride contained in the water drops accidentally carried over with the chloroform and also prevents the evaporation of iodine. When the extraction is complete more water is added to the chloroform solution. The water becoming turbid from the formation of bismuth oxychloride, is decanted and without shaking more water is added, again decanted and this repeated until the water added no longer becomes turbid nor is colored from the presence of iron. To the chloroform solution are then added 20 cc. of water and excess of potassium iodide and with frequent shaking the iodine determined by means of volumetric sodium thiosulphate in the usual way.

The investigation showed that the compounds BiI_3 and BiOI are only obtained if much attention is paid to the quantities of chemicals and the manipulations employed. If a solution of $Bi(NO_3)_3$ is poured into a solution of KI, at first BiI_3 forms and, if excess of KI is added, again dissolves in the excess, forming potassium-bismuth iodide. If to this solution sodium carbonate is added as long as effervescence is caused by its further addition, a yellowish-red precipitate is thrown down which on washing and drying becomes brick-red. This precipitate contains 26.55 percent of iodine and is identical with the preparation in the market; it however is not BiOI. Further work showed that the iodine content depended upon the condition of preparation, that all are mixtures of BiI_3 and BiOI and that, regardless of composition, all have the same color.

[Chem. Centralbl. 1898, II, p. 941; from Schweiz. Wohsch. Pharm. 36, p. 421.] *W. A. P.*

The Quantitative Separation of Metals in Alkaline or Acid Solutions by Means of Hydroxylamine and Hydrazine.—P. Jannasch reports a number of separations based upon the reducing action of hydroxylamine and hydrazine. The paper is divided as follows:

Part I. The separation of mercury from copper, bismuth, lead, cadminum, arsenic, antimony or tin, respectively. In each case full details have been worked out and the results of determinations are given. The method for the separation of mercury from copper follows:

In a solution of 0.2 to 0.4 gm. each of mercuric chloride and copper sulphate in 50 cc. of water are dissolved 1 gm. of tartaric acid, then 25 cc. of concentrated ammonia water and 20 cc. of a 10 percent solution of hydroxylamine hydrochloride added. The beaker, containing the mixture, is covered

placed upon an asbestos plate and "warmed" with the "free" flame of a Bunsen burner for 15 minutes when the mercury separates in the metallic condition. It is allowed to cool, set aside for several hours and then the precipitate collected upon a filter and washed with warm water. The precipitate and filter are placed in a porcelain dish, treated with strongest fuming nitric acid and the solution evaporated to dryness on a water bath. The evaporation with nitric acid having been repeated several times to insure complete destruction of organic matter, the dry residue is finally dissolved in a few cc. of concentrated hydrochloric acid. Should a turbid solution result, this is quickly cleared up by a little potassium chlorate. This solution is transferred to a beaker and diluted with water to 250 to 300 cc., warmed to 70—80° C., saturated with hydrogen sulphide and the determination concluded in the usual way. From the filtrate containing the copper, the ammonia is to be expelled, a little bromine water added and then acidified with hydrochloric acid and the copper precipitated with potassium sulphocyanate and the copper sulphocyanate converted in the usual manner.

Part II. The separation of mercury from molybdenum, tungsten, aluminum, chromium, manganese, cobalt, nickel and uranium, respectively, is outlined. In the main, the separation is carried out as in part I., the mercury determined as there described and the other metals estimated by the customary processes.

Part III. treats of the separation of selenic and telluric acids from sulphuric and phosphoric acids. Under proper conditions it was found possible to remove all selenium, eventually tellurium, from sulphuric or phosphoric acid by means of hydroxylamine.

Part IV. describes the quantitative separation of selenium from tellurium, the former being thrown out on boiling a concentrated strongly hydrochloric acid solution with hydroxylamine for some time.

Part V. describes the separation of selenium and tellurium from palladium and barium.

Part VI. Selenium and tellurium are separated by means of hydrazine sulphate. [Ber. d. chem. Gesellsch. 31, p. 2377.] *W. A. P.*

Emetine Octoiodide.*—Extraction and Estimation of Alkaloids in general. Separate Estimation of Strychnine and of Brucine in Nux Vomica. H. M. Gordin and A. B. Prescott.

1. Emetine Octoiodide. This is made according to the general method worked out by the authors for the preparation of the higher alkaloidal periodides. Two hundred cc. of a half percent solution of emetine in water acidulated with hydrochloric acid are poured slowly and with constant stirring into five hundred cc. of a strongly acidulated solution containing about 1 percent iodine and 1½ percent potassium iodide and the mixture con-

* This is a continuation of the communication in Proc. Am. Ph. Ass. 46, p. 355.

tinuously shaken till the supernatant liquid becomes perfectly transparent. The precipitate is then separated by means of the pump, quickly washed with very cold water and dried, first on porous plates and then in vacuum over sulphuric acid. The octoiodide is a dark brown powder hardly soluble in benzol. ether or chloroform, quite soluble in alcohol and very soluble in a mixture of chloroform and alcohol. Analysis shows the body to be emetine hydriodide heptaiodide, $C_{28}H_{40}N_2O_5.HI.I_7$.

2. Extraction and Estimation of Alkaloids in general. A few grams of the powdered drug are weighed out into an eight ounce ointment jar and rubbed up first by the aid of a small pestle with a few cc. of an ethereal ammoniacal mixture composed of stronger ammonia water and alcohol, each 5 cc., chloroform 10 cc. and ether 20 cc., and then a few more cc. of this mixture are added, so that the drug is well covered. The jar is then covered, with the pestle inside, and set aside for about four or five hours, agitating by circular movement very frequently. The vessel is then opened, kept in a current of air till the odor of ammonia disappears and then put into a vacuum desiccator for a few hours. Some powdered sodium chloride is mixed in now with the drug, the mixture dumped on glazed paper and carefully poured into a small percolator provided with a glass stopcock. The jar is then cleaned repeatedly with sodium chloride and the cleanings added to the contents of the percolator. The drug is then percolated with some suitable menstruum, mostly chloroform, till exhausted, which is proven by means of Wagner's reagent applied to a few drops of the percolate. The percolate is received into a flat evaporating dish, and when finished is placed in a good draught at a temperature of about 30° C. After evaporation of the menstruum, the residue is taken up with acidulated water and made up to 100 cc. Of this an aliquot part representing a definite quantity of the drug is filtered off and poured into another 100 cc. flask containing 20 or 30 cc. of standardized solution of iodine. The flask is then filled up to 100 cc. and shaken till the supernatant liquid is clear. Fifty cc. are then filtered off and the excess of iodine determined by means of a standard solution of thiosulphate of sodium. The amount of iodine consumed by a given amount of drug, multiplied by the suitable factor, gives the amount of alkaloid in that amount of drug. The solution of iodine and of thiosulphate should not be stronger than tenth normal, since the periodide is liable to form lumps; otherwise there is no restriction upon the strength of the solutions used, provided their standard be exactly known.

The factors so far established are:

Emetine	0.5453
Atropine	0.2849
Strychnine and brucine (mean)	0.47845

The advantages of this method consist in the fact that several analyses can be made simultaneously, as the reaction between iodine and thiosulphate

is very prompt, and that by this method of extraction objectionable alkaloids can be removed by some suitable solvent. (See Morphine, Pharm. Archives, June, 1898; J. Am. Chem. Soc., 20, p. 724.)

3. Separate Estimation of Strychnine and Brucine. The acid solution representing a definite quantity of the drug is divided into parts. In one part the amount of iodine consumed by both the strychnine and the brucine is determined; in another part the strychnine is precipitated by potassium ferrocyanide, the strychnine ferrocyanide decomposed by zinc sulphate and determination made of the amount of iodine consumed by the strychnine alone. Knowing the respective factors of strychnine and brucine, the amounts of strychnine and brucine are easily deduced.

[Am. Journ. Ph. 71, p. 14.] *H. M. G.*

Bismuth oxyiodide. — This compound which has been recommended by Reynold, and which, according to Matlack, can displace subnitrate of bismuth in all internal and iodoform in all external applications, can best be prepared according to Sohet in the following manner: To a solution of 306 parts of subnitrate of bismuth in 900 parts of pure nitric acid warm water is added until a slight turbidity becomes perceptible. This solution is then poured into a warm solution of 165.6 parts of potassium iodide in 2500 parts of water. The brown precipitate is washed and thus rendered lighter in color. This method is stated to have the advantage over others because it yields a product of characteristic color and of definite oxy content.

[Pharm. Ztg., 43, p. 668; from Chem. Ztg.; from Ann. de Pharm. 1898, p. 244.] *E. K.*

Botany and Pharmacognosy.

Cassia Production in China. — The cassia-producing districts in China are situated in the southern borderlands of Kwangtung and Kwangsi provinces south of the West River. The market town of Ta-wa in the P'ingnan district, is the centre of the cassia trade, where 50,000 to 60,000 piculs are annually disposed of. It is exported, packed in matting, by junk to Canton. The former province is reported to produce three times the export from the latter. The total export of cassia, including cassia lignea, buds, twigs, ting-bark and broken cassia from the two provinces through Canton in 1896 amounted to 102,810 piculs valued at 590,798 Haikwan taels. Of so-called cinnamon, 99 piculs valued at 4801 H. taels were also exported, as well as 398 piculs of leaf-oil valued at 56,484 H. taels making a total value of cassia and cassia products of 650,083 H. taels. China is reported to consume very much more than she exports, so that the total value of the cassia trade must be very considerable.

[Pharm. Journ. 1898, p. 227.] *R. H. T.*

Sophistication of Sarsaparilla.— O. A. Farwell reports a case of unusually bare faced adulteration of Honduras sarsaparilla. A bale of this drug was found to contain several bundles so loaded with large, heavy stones that the drug itself made up but a quarter of the gross weight.*

[Bull. of Pharm. 13, p. 80.]
R. H. T.

An Adulteration of Sarsaparilla. — C. Hartwich, at the 70th meeting of the German Naturalists and Physicians, reports a new adulteration of a sarsaparilla. It resembles the real article in both external appearance and anatomical structure, differing from the genuine in the absence of starch and calcium oxalate. In place of the starch, sugar is found. The root comes from the Amazon valley and is probably a member of the *Liliaceæ*.

[Pharm. Zeit. 43, p. 684.]
R. H. T.

Star Anise in China. — The Chinese name for star anise is *Pa-Chioh*, signifying "eight horns or corners", an allusion to the shape of the fruit. Alex. Hosie reports that the tree producing this fruit (*Illicium verum* Hook. F.) occupies a comparatively small area, being confined to Tonquin

* Although adulteration so apparent as that here described is not usual, there is no lack of cases but a few degrees less obvious. A case in point is a specimen of arnica root that came under the writer's notice not long since. A respectable firm had sent under this name an article that without critical study was seen to consist of at least six different sorts of roots. A number of these were so strikingly different that it was difficult to understand how careful dealers could be so easily deceived. If deception requires so little skill, it is only with a feeling of alarm that one can contemplate the situation in drugs more readily sophisticated. *R. H. T.*

The Review is indebted to the Bulletin of Pharmacy for the use of the accompanying illustration. *Ed.*

and south-west Kwangsi. The bulk of the anise seed trade has hitherto passed through the port of Pakhoi, this port in 1896 exporting 6691 piculs valued at 113,817 Haikwan taels. This, as well as the oil extracted from the fruits (2053 piculs valued at 410,692 taels), was sent to Hong Kong while 69 piculs of oil valued at 15,552 taels passed Lungchow for Tonquin. It is stated that owing to the destructive method of collecting the fruit, there is a good crop but once in three years.

[Pharm. Journ. 1898, p. 226; from Consular Report.] *R. H. T.*

The Constituents of Digitalis Leaves.—M. Cloetta has taken up the study of this important drug for the reason that Schmiedeberg's classic results, which were obtained with the seeds of *Digitalis purpurea*, have been wrongly applied in all text-books to the leaves. He refers to Killiani's results which are not in accord with those obtained by Schmiedeberg with the leaves.

His work, which seems to have been done with great care, produced the following results:

Digitalis leaves contains digitonin, digitalin, digitoxin and a coloring matter which is identical with that found by Schmiedeberg in digitalis seeds. He failed to find digitalein, but he is not ready to say that it is not present in small amounts.

Digitoxin and digitonin accompany each other almost constantly throughout the entire examination making a quantitative separation impossible. In the seeds digitalin predominates, while digitoxin is present only in small quantity. In the leaves, however, digitoxin is more abundant, while digitalin is much less so. The author intends to continue his researches, with the principles which he has separated, along clinical lines.

[Arch. f. Exper. Path. u. Pharmak., Bd. 41, p. 420.] *J. O. S.*

Kino from Myristica. — Edward Schaer of Strasburg in a note in the Pharmaceutical Journal discusses kino-like products from species of the genus *Myristica*.

The dried juice of the bark of *M. malabarica* Lam. and *M. fragrans* Houtt., the common nutmeg, in physical qualities and appearance shows but little difference from the official Malabar kino. These *Myristica* kinos agree in the chemical reactions in all important points with the kino of *Pterocarpus Marsupium*. Drugs very similar in character and in part bearing a very close resemblance to official kino are to be found in the following families: *Leguminosæ* (*Butea*, *Pterocarpus*, *Millettia*), *Saxifragaceæ* (*Ceratopetalum*), *Myrtaceæ* (*Eucalyptus*, *Arigophora*) and *Myristicaceæ*.

The *Myristica* kinos differ from the *Pterocarpus* kino, and probably also from *Butea* and *Eucalyptus* kino by containing in the crude state of the inspissated fresh juice, larger or smaller amounts of a distinctly crystalline calcium salt, viz.: calcium tartrate, suspended in and depositing from, the

liquid juice. By this characteristic admixture it can be easily distinguished from the official kino and probably also from other kinos of commerce.

[Bull. of Pharm. 12, p. 510; from Tropical Agriculturist.] *R. H. T.*

Study of several False Cinchona Barks.—C. Hartwich discusses in great detail the botanical and geographical source, and the microscopical structure of several false cinchona barks which have come into his possesion during the past year and a half. One plate of illustrations accompanies the article which is so exhaustive that justice cannot be given in a short abstract. Those readers, who are interested in the subject, are referred to the original article. [Arch. d. Pharm. 236, p. 641.] *J. O. S.*

Anabsinthin, a new Principle found in Absinthium.—By a method differing somewhat from that usually employed for the isolation of absinthin, Adrian and A. Trillat have separated a new compound, in a perfect state of purity, which they have named anabsinthin. Combustions and molecular weight determinations show that it has the formula $C_{18}H_{24}O_4$, while absinthin is $C_{15}H_{20}O_4$.

It is described as forming long white, prismatic needless possessing a persistently bitter taste. Slightly soluble in water, but more so in alcohol, benzin, and chloroform. It crystallizes from acetone in magnificent crystals which are stated to be veritable crystallographic curiosities. Strong sulphuric acid turns it violet red to blue.

The authors class this new substance with the neutral bodies rather than with the glucosides. It has no marked physiological action.

During the manipulation a fatty principle was encountered which will receive further study. [Compt. rend., 128, 115.] *J. O. S.*

Contribution to the Chemistry of Peucedanin and Oreoselon.—A. Jassoy and P. Haensel, [Arch. d. Pharm. 236, p. 662.] *J. O. S.*

Oleum Cadi.—J. Troeger and P. Feldmann.

[Arch. d. Pharm. 236, p. 692.] *J. O. S.*

Upon the Fixed Oil of the Rhizome of Aspidium filix mas.—Not since 1851 has any one made a chemical analysis of the fixed oil which, together with filicic acid, aspidin and other substances, is contained in the etherial extract of male fern. Luck (1851) mentioned filixolinic acid and filosmenic acid as constituents of the oil.

Julius Katz separated a kilo of the dark green fixed oil possessing the characteristic odor of etherial extract of male fern. He finds, after extended and careful examination, that the oil is made up of the glycerides of oleic, palmitic, and ceratonic acids of which the first named greatly predominates.

The filixolinic acid of Luck is simply oleic acid and the filosmenic acid, is butyric acid. Phytostearin could not be found.

[Arch. d. Pharm. 236, p. 655.] *J. O. S.*

Hyoscyamus Muticus.—Under this title J. Gadamer gives a preliminary report upon the work he has done on this poisonous plant of the *Solanaceae*. Because of the numerous cases of poisoning resulting from the misuse of this plant in Egypt, a chemical study of its constituents was considered desirable and interesting. The author received a large consignment of all parts of the plant from Professor Kippenberger-Cairo, and submitted the different parts to separate analysis. He agrees with Dunstan and Brown that the principal constituent is the alkaloid hyoscyamine which he separated with ease by evaporating the chloroformic extract. He searched for scopolamine in the capsules but did not find it. A little atropine was found in the mother liquors but he is of the opinion that it is developed during manipulation. From different parts of the plant the following per cents of hyoscyamine were obtained:

1. Capsules and seeds.....1.34 p. c.
2. Leaves.....1.393 p. c.
3. Stems.....0.569 p. c.
4. Roots.....0.77 p. c.

[Arch. d. Pharm. 236, p. 704.] *J. O. S.*

Ferment of Digitalis.—Brissemort and Joanne find that the ferment first discovered by Kosmann in digitalis leaves, and considered by him peculiar to that plant, is an oxydase.* The authors have detected a similar body in the leaves, stems and green berries of *Solanum dulcamara*, and it is probably analogous to the oxydases isolated from many plants. The authors find that the fresh and recently dried leaves of digitalis are very rich in this ferment, but that on keeping it gradually disappears. Thus, leaves gathered four months previous to the experiment gave marked reaction for its presence; those of last year's crop did so but feebly; while leaves gathered in 1896 gave no reaction.

[Pharm. Journ., 1899, p. 25; from Journ. Pharm. Chim. (6), 8, p. 481.] *E. K.*

Localization of Alkaloids.— At the 70th convention of German Naturalists and Physicians at Düsseldorf. Wijsmann of Leyden reported very interesting and valuable results in the matter of localizing in the living plant the alkaloidal constituents. He described the advantages resulting from conducting such a study on cells that have been brought into the plasmolytic condition by the action of a thirty percent solution of saltpeter.

Nicotine is known to be located in the lower cells of the hairs on the leaves of *Nicotiana tabacum* and *N. rustica* and can be detected with an iodine solution. It is likewise found in the epidermal cells standing in connection with these hairs. In endeavoring to answer the question whether

* See this journal vol. 16, p. 391.

it is situated in the protoplasm or in the vacuoles, the plasmolytic method is made use of. The cells are placed in a thirty percent saltpeter solution which extracts the water from the cells producing results described by De Vries as abnormal plasmolysis. The protoplasm dies, only the walls of the vacuoles being excepted, the latter structures appearing among the dead protoplasm as clear, spherical, strongly contrasted globules. When treated with a saltpeter solution in which iodine is dissolved a precipitate is obtained exclusively in the vacuoles. Thus Wijsmann tests separately the protoplasm of the cell and the fluids of the vacuoles for the alkaloid, finding it in the latter only.

As a second example, berberine was studied. When cells containing berberine are plasmolyzed with strong saltpeter solution, the contracted vacuole assumes a darker color than it possessed originally, owing to the concentration of the fluid in the vacuole. Gradually the wall of the vacuole dies and becomes penetrable to saltpeter which enters causing a granular precipitation of nitrate of nicotine, which soon begins to crystallize. One can observe the vacuole fill with the crystalline grains which form a spherocrystal in the place occupied by the contents of the vacuole.

In this method, the plasmolyzing agent is likewise the reagent and by increasing its concentration the appearance of crystals of the nitrate of the alkaloid results. The author believes this to be the first instance of the observation under the microscope of crystal formation in the cell as a microscopic reaction for alkaloids in fresh sections.

[Pharm. Zeit. 43, p. 691.] *R. H. T.*

Microchemical Study of Alkaloids in Drugs.—The location in the drug occupied by its active principle is a question of practical as well as scientific importance. Hermann Barth has recently investigated a number of drugs containing alkaloids by use of microscopical reagents and methods and his results are worthy of some notice.

The seat of alkaloids in drugs is by no means always the same, even in the case of similar organs. They sometimes occur at points where the most rapid development is taking place, as in the vegetative points of *Colchicum*. In cases they are located especially in parts that have finished their development and from which the alkaloids are not withdrawn for use, as piperine in the oil cells of the perisperm and wall of the fruit of the pepper. They originate in the plasms of the cell, appearing later in the cell sap where they form salts with the acids there present.

In regard to the function of the alkaloids in plants, the view at present generally held relegates them to the excreted products which do not again enter into the plant's metabolism. They are thought perhaps to act as a protection against the attacks of animals, a view supported by their usually peripheral position.

The author sought to determine by quantitative methods whether in the seeds containing alkaloids these substances undergo any change during the germination of the seeds. *Datura* seeds, in which the alkaloids are located in the nucellus layer, were found to show a marked decrease in the amount of alkaloid present where ungerminated seeds and those which had undergone germination were compared; the latter were found to contain only one-fifteenth of the quantity present in the former. *Conium* tested in a like manner gave similar results. The author is, therefore, of the opinion that the view which regards alkaloids as reserves cannot be denied for certain cases.

In order to secure greater accuracy, Barth extracted the alkaloid from sections of the various drugs and when applying reagents to the fresh sections used the extracted sections as control objects.

As reagents for alkaloids, the author made use of a long series of compounds. Potassium iodide solution of iodine was found to be useless in starchy and chlorophyll-bearing tissues. Treatment of starchy tissues with iodine was secured by exposing the sections to the fumes of iodine and observing in paraffin oil, the alkaloid being precipitated without the coloring of the starch. Zinc chloriodide, Mayer's reagent, tannin (10 p. c. solution), picric acid (1:10), chloride of gold and of platinum, potassium-platinum cyanide, mercuric chloride, ferro- and ferri-potassium cyanide, ammonium molybdate and sulphuric acid (Fröhde's reagent), potassium bichromate (5 p. c. solution), iron chloride (5 p. c. solution), copper sulphate (10 p. c. solution), bromine water, sodium hydroxide and other reagents were made use of.

The study of the individual drugs gave an interesting series of results.

In *Conium maculatum* L., the best reagents for coniine are solution of iodine in potassium iodide ($I:KI:H_2O=1:1:100$), potassium-bismuth iodide, gold chloride, bromine water, iodine, bromine and HCl fumes. The alkaloids are found in the inner parts of the wall of the fruit and in those parts which immediately surround the fibro-vascular strands which traverse the ribs of the fruit. The endosperm and embryo are free from alkaloids.

In *Pegonum Harmala* L., the alkaloids, harmaline and harmine, are located in a layer of large cells adjacent to the remainder of the nucellus tissue. This is a very favorable object for the demonstration of alkaloids by microchemical methods.

In the seeds of *Datura stramonium*, *Hyoscyamus niger* and *Atropa belladonna*, collected before ripeness, the alkaloids are located chiefly in the nucellus, but endosperm and embryo perhaps contain traces. The epidermis of the seed covering is free from alkaloids.

The best microchemical reagents for colchicine in the tubers of *Colchicum autumnale* are: I in KI sol., picric acid, tannin, conc. sulphuric acid and conc. hydrochloric acid. The reactions indicated alkaloid in the epidermis of the scales surrounding the corm, in the epidermis of the corm itself, in

the bundle sheaths and in the phloem. The growing point and the adjacent tissue for 1 cm. shows alkaloid in all cells alike. A concentration toward the periphery is marked. The base of the corm is poor in alkaloid.

In the stem the alkaloidal reaction is to be detected in the epidermis, in bundle sheaths and in the phloem. The leaves, likewise show alkaloids in the bundle sheaths, in the phloem and epidermis. It is especially pronounced in the epidermis, being unevenly distributed: it is not especially abundant in the guard cells.

In the unripe seeds, the alkaloid is present in the seed coat in an interior layer composed of quadratic cells. In the ripe seeds, it is found especially in strongly compressed cells in the same region.

In *Sabadilla officinarum* Brandt., the alkaloids are found in the endosperm and embryo and in smaller quantity in the seed coat also. No veratrine is present in the seed coats and it is possible that the alkaloids of this region are different from those of the embryo and endosperm.

The seeds of *Aconitum Napellus* contain aconitine in the cells of the endosperm, the central part of the seed being somewhat richer than the periphery. The embryo also contains the alkaloids, while the seed coats are free.

The bases contained in seeds of *Areca Catechu* are found in the endosperm cells. The best reagents for this drug are potassium-bismuth iodide, picric acid, gold chloride, platinum cyanide and vapors of iodine. hydrochloric and nitric acids.

In the Calabar bean, *Physostigma venenosum* Balfour, the seat of the alkaloids is in the cell contents of the cotyledons, as appears especially on treatment with I in KI solution, bromine water, nitric acid and iodine vapors.

The seeds of *Strychnos nux vomica* L. contain in the contents of the endosperm cells strychnine and brucine; the embryo, however, contains only brucine. Several other species of *Strychnos* were studied. The seeds of *S. potatorum* L. fils., *S. spinosa* Lam. and a third, undetermined species from the Zambesi valley contain no alkaloids in the seed. In *S. Ignatii*, the alkaloids are easily demonstrated. *S. spinosa* Harvey showed traces of brucine and strychnine, confined to the outermost three or four cell layers. The embryo lacks alkaloids. *S. Tienté* contains much strychnine and little brucine.

[Bot. Centralbl. 75, p. 225.] *R. H. T.*

Practical Pharmacy.

Vanadin is according to Weber a solution of a vanadinate—which is not mentioned—and chlorate of sodium. It is said to possess antiseptic properties and is recommended as a remedy against tuberculosis. How the medicament administered in doses of 6—30 drops daily is to get at the bacilli is not stated. [Pharm. Ztg. 43, p. 668.] *E. K.*

Pulvis cuticuloris is the name given by Unner to a flesh-colored powder consisting of zinc oxide, 2.0; magnesium carbonate 3.0; white bolus, 3.0; red bolus, 2.0; rice starch 10.0. It is to be used in the treatment of seborrhœa.

[Pharm. Centrh. 39, p. 652; from Monatschr. f. pr. Derm. 1898, p. 246.] *E. K.*

Iodol Menthol, iodol to which 1 p. c. of menthol has been added, is prepared by Kalle & Co. of Bieberich. It is said not to have the unpleasant odor of iodol, but to possess the action of iodol in an "intensified" degree.

[Pharm. Ztg. 43, p. 668.] *E. K.*

Does Hydrastine exist combined or free in the Rhizome and Fluid Extract of Hydrastis?—O. Linde separates the free hydrastine from hydrastis as follows: the powdered rhizome is extracted in a Soxhlet's apparatus with ether for 8 hours, the ether extract shaken with 5 per cent hydrochloric acid, the acid solution treated with 10 p. c. ammonia water and then thoroughly shaken with ether. An aliquot portion of the etherial solution is evaporated and the residue weighed. The weight multiplied by ¾ equals the total hydrastine in the free state.

For determining the combined hydrastine the previously extracted drug is dried and extracted with 96 p. c. alcohol as before. The alcoholic solution is evaporated to a syrupy liquid and examined by the process given in Pharm. Centralhalle 1895, p. 353 for fluid extracts.

The following results were obtained:

	1.	2.
Free hydrastine.....	1.25 p. c.	1.288 p. c.
Combined hydrastine.....	1.035 p. c.	2.31 p. c.

The fluid extracts were assayed according to the method given above, with slight modifications. In 10 gms. the total hydrastine was determined and in another 10 gms. the free hydrastine was estimated and the combined alkaloid taken by difference.

The following are the amounts obtained in three different samples:

Free hydrastine.....	1.065 p. c.	1.62 p. c.	1.17 p. c.
Combined hydrastine.....	0.855 p. c.	1.35 p. c.	1.185 p. c.
	1.92 p. c.	2.97 p. c.	2.355 p. c.

In No. 1. 55.5 p. c. was free hydrastine and 44.5 p. c. combined.
In No. 2. 54.55 p. c. " " " " 45.45 p. c. "
In No. 3. 49.68 p. c. " " " " 50.32 p. c. "

From the above it is seen that the relation between free and combined hydrastine is not constant. (Arch. d. Pharm. 236, p. 696.] *J. O. S.*

Precipitates in Fluid Extract of Hydrastis.—Upon long standing fluid extract of hydrastis deposits a more or less granular powder of pale yellow or brownish color. E. Schmidt reported the presence of phytostearin

in this deposit in 1888. Two years later he found, beside phytostearin, berberine, berberine salts, fat and resin in this deposit. Loebner (1897) states that this precipitate consists mainly of berberine and phytostearin while hydrastine and canadine could scarcely be detected.

O. Linde examined the precipitates from three fluid extracts prepared by himself and kept in a cold chamber. The berberine was estimated as a sulphate. From the precipitates of the three samples he obtained:

1. 0.138 berberine sulphate=0.107 =26.7 p. c. berberine.
2. 0.115 " " =0.089 =22.24 p. c. "
3. 0.126 " " =0.0975=24.37 p. c. "

Hydrastine was estimated by the process given in Pharm. Centralhalle, 1895, p. 353 and the following results obtained:

1. 0.018 = 4.5 p. c. hydrastine.
2. 0.0885=22.1 p. c. "
3. 0.150 =37.5 p. c. "

From sample No. 1 he separated 0.91 p. c. phytostearin.

From the above it is evident that the precipitates formed in fluid extracts of hydrastis are not of constant composition. They are composed mainly of berberine and hydrastine with very small quantities of phytostearine. Hydrastine is unquestionably present in the fluid extract in the free state for the reason that its salts are very soluble in alcohol and water and the free alkaloid requires 120 parts of 96 p. c. alcohol and 220 parts of dilute alcohol to dissolve it. [Arch. d. Pharm. 236, p. 698.] *J. O. S.*

Physiology and Therapeutics.

The Action of Saline Purgatives.—Since the time of the classical researches of Hay and of Rutherford upon the action of purgatives, there have not been many papers of very great importance upon this subject, although from time to time minor researches concerning it have been published by Hofmeister, Hedin, Höver, and others. It will be remembered that Hay decided, as a result of his studies, that saline purgatives always excite more or less secretion from the alimentary canal and that low diffusibility of the salt impedes the absorption of the secreted fluid. The practical import of his studies was that with the average saline it was wise to give it in concentrated solution, when a free watery evacuation was desired, since its power to purge disappears to a great extent with the dilution of the solution.

A still more recent study of considerable interest has just been published by Wallace and Cushney in the American Journal of Physiology upon the subject of intestinal absorption and saline cathartics. These authors first point out that Heidenhain came to the conclusion that two distinct factors were involved in the action of salines, namely, the osmotic influence of the solution and the physiological activity of the bowel. On the other hand, Hamburger, while accepting the theory of osmotic action, has attempted to show that the physiological activity, so-called, is really a combination of

certain physiological forces. Recent researches which have been made indicate that red blood cells and their tissues imbibe solutions of certain salts more freely than others, and it is in this line that most of Wallace and Cushney's work has been carried out. They noted at the beginning of their research that most of the saline cathartics depend upon the anion, or acid constituent of the salt, for their purgative properties. Thus, it is a well known fact that sodium sulphate, potassium tartrate, sodium phosphate and similar substances act as purgatives, while sodium chloride, potassium chloride, etc., do not possess this action to any great degree. When we come to the magnesium salts it is found that not only the anion or acid constituent determines the purgative property, but the cation or basic constituent also possesses a purgative property, and this is indicated by the fact that magnesium chloride and magnesium carbonate possess purgative action.

The method of experimentation resorted to by these investigators need not be discussed here, as the details of the method are purely technical; suffice it to state that their ability to do original work, coupled with their studies of other investigators, has enabled them to devise means which are distinctly reliable. Experimenting with a large number of substances they found that some were rapidly absorbed in the stomach and small intestine, while others were slowly absorbed and reached the large intestine before absorption took place, the result being that such salts not only acted by an influence which they might exert upon the intestine itself, but supplied the intestinal contents with so large a quantity of liquid that the fecal matter was fluid and therefore more readily passed. To express it in other words, the whole of the solutions of sodium chloride and sodium phthalate was absorbed in the course of its passage through the stomach and small intestine, while three-fourths of the citrate and sulphate solutions reached the large intestine. It is the sulphates which are largely found in the natural purgative waters, and as many of these waters are dilute solutions it would seem probable that their purgative properties depend largely upon their not being absorbed from the alimentary canal. Further, dilute solutions of the saline cathartics are not only slowly absorbed themselves, but they retard the absorption of fluid from the stomach and small intestine and so aid in a secondary manner in the production of fluid stools. Further than this, some natural mineral waters contain in addition to their purgative salts insoluble calcium salts which still further tend to retard absorption in the intestine. It is evident, therefore, that saline purgatives act in three ways: First, by causing an outpouring of fluid from the surrounding tissues into the intestinal canal; second, by increasing the liquid in the intestinal canal by their presence; and third, by preventing the absorption of other fluids which would otherwise be taken up into the general tissues. [Therap. Gazette, 22, p. 672.] *E. K.*

Literary.

Books and Pamphlets Received.

P. Blakiston's Son & Co.—Philadelphia. 300 Questions on medical subjects arranged for self-examination. With proper references to standard works in which the correct replies will be found. Second edition, enlarged. One vol., pp. 189. $0.10.

Deutsche Verlags-Anstalt—Stuttgart. Lexikon der gesamten Technik und ihrer Hilfswissenschaften. Herausgegeben von Otto Lueger im Verein mit Fachgenossen. XXXIV. Abtheilung: Stauanlagen — Terrassendach. 1898. Preis des ganzen Werkes 175 Mark.

Verlag von Wilhelm Engelmann—Leipzig. Grundriss einer Geschichte der Naturwissenschaften. Zugleich eine Einführung in das Studium der grundlegenden naturwissenschaftlichen Litteratur von Dr. Friedrich Dannemann, Direktor der Realschule zu Barmen. II. Bd.: Die Entwicklung der Naturwissenschaften. Ein Bd., pp. 435, mit 76 Abbildungen, zum grössten Theil in Wiedergabe nach den Originalwerken und einer Spektraltafel. 1898. M. 9.00; geb. M. 10.50.

Ernst Guenthers Verlag—Leipzig. Schlickums Ausbildung des Apothekerlehrlings und seine Vorbereitung zum Gehilfenexamen. Nebst einem tabellarischen Repetitorium der Chemie und Pharmakognosie. Neunte, mit Rücksicht auf die neuesten Anforderungen gänzlich umgearbeitete und vermehrte Auflage. Herausgegeben von Dr. G. Gaenze, Dr. C. Jehn und R. Schlickum. Zweite Hälfte, pp. 449—936. 1899.

B. Schmid'sche Verlagsbuchhandlung — Augsburg. Kurzes Repetitorium der organischen Chemie. Speziell für das Bedürfnis des Mediciners und Pharmazeuten bearbeitet. Zweite, vielfach erweiterte Auflage. Ein Bd., pp. 227. 1899. M. 2.00.

Verlag von Julius Springer—Berlin. Das Mikroskop und seine Anwendung. Ein Leitfaden bei mikroskopischen Untersuchungen für Apotheker, Aerzte, Medicinalbeamte, Techniker, Gewerbetreibende etc. von Dr. Hermann Hager. Nach dessen Tode vollständig umgearbeitet und neu herausgegeben von Dr. Carl Mez, Professor an der Universität Breslau. Achte stark vermehrte Auflage. Ein Bd., pp. VIII., 335, mit 326 in den Text gedruckten Figuren. 1899.

Verlag von Strecker & Moser—Stuttgart. Apothekerkalender für das Deutsche Reich begründet von Oscar Schlickum 1899. Herausgegeben von Dr. Franz Luedtke.
Erster Theil: Kalender, Hilfsmittel für die pharmazeutische Praxis.
Zweiter Theil: Gesetzsammlung, Verzeichniss der Apothekenbesitzer Deutschlands etc. 1899. I. Th. geb. M. 1.50; II. Th. br. M. 2.00.

Urban und Schwarzenberg—Vienna. Die wichtigsten vegetabilischen Nahrungs- und Genussmittel mit besonderer Berücksichtigung der mikroskopischen Untersuchung auf ihre Echtheit, ihre Verunreinigungen und Verfälschungen, von Dr. A. E. Vogl. Ein Bd., pp. xv, 575, mit 271 Holzschnitten. 1899.

John Wiley & Sons—New York. Physical chemistry for beginners by Dr. Ch. Van Deventer with an introduction by Prof. J. H. Van't Hoff. Authorized American edition from the German edition translated by Dr. B. B. Boltwood, Instructor in Physical Chemistry in the Sheffield Scientific School of Yale University. One vol. pp. x, 154. 1899. $1.50.

Field Columbian Museum—Chicago. Annual report of the Directors to the Board of Trustees for the year 1897—98. Report series: Vol. I, No. 4. Brochure, pp. 260—344.

Authors—Madison, Wis. The dissociative power of solvents. By L. Kahlenberg and A. T. Lincoln. Pamphlet, pp. 24. Reprint from the Journ. of Phys. Chem. 1899.

Authors—Madison, Wis. The inversion of sugar by salts. By L. Kahlenberg, D. J. Davis and R. E. Fowler. Pamphlet, pp. 23. Reprint from Journ. Am. Chem. Soc. 1899.

Author—Knoxville, Tenn. 1.) A National Department of Science, necessary for the coordination of the scientific work of the U. S. Government; 2) The National University: a growth, not a creation, by Charles W. Dabney, Jr. Pamphlets, pp. 13 and 12 resp. Reprints from Science, 1897.

U. S. Dept. of Agriculture—Washington. Thirty poisonous plants of the United States, by V. K. Chesnut, Asst. Botanist. Farmers' Bulletin No. 86, pp. 32.

Reviews.

HAGER'S HANDBUCH DER PHARMACEUTISCHEN PRAXIS. Für Apotheker, Aerzte, Drogisten und Medicinalbeamte. Vollständig neu bearbeitet und herausgegeben von Dr. Bernhard Fischer und Dr. C. Hartwich. Mit zahlreichen Textholzschnitten. Erster Band, I. Lieferung. Berlin, Julius Springer. 1899.

On a survey of the German pharmaceutical literature of the last half century there is in the abundance of works in every domain of the theory and practice of pharmacy none which has met with so favorable and universal acceptance and so wide a dissemination as Dr. Hager's "Handbook of the practice of Pharmacy," first published in about 1873. This book was at once and has ever since been received and used not only by the German pharmacists and druggists, but among those of all countries, as the foremost standard guide, as well as for the elaboration of kindred compendiums of applied pharmacy and of pharmaceutical formularies. No other modern pharmaceutical practitioner and author has succeeded in combining in one comprehensive hand book the accumulated results of theoretical knowledge and practical experience of a life time with equally masterly representation in a systematic arrangement and with such lucid style as Hager has achieved in his *chef d'oeuvre* of his long and laborious professional career. For more than a quarter of a century the book has maintained the foremost rank among all works of its kind and has ever since been in use and in demand.

In the declining years of his life Dr. Hager was mindful of the desirability of preparing a new edition commensurate with recent progress in all branches of the art and the sciences of applied pharmacy, and carefully completed all arrangements for the preparation and subsequent elaboration of a new edition. This was entrusted to the experienced and approved hands of his former co-laborers Dr. Bernhard Fischer in Breslau and Prof. Carl Hartwich in Züirich, who with the assistance of several pharmaceutical experts have succeeded in bringing about the new edition of the "Handbook" so that its publication has just begun. Like most German books of an extended scope, this will also be issued in fascicles which will appear in rapid succession.

The first fascicle is prefaced by a prospectus of the editors containing all information in regard to the elaboration and improve-

ment of the new edition, of which the 144 pages of the initial fascicle bear ample evidence. The book has been re-written almost throughout and has been fully brought into conformity with the present status and shape of pharmacy and the drug-trade and with their altered practical conditions and trade requirements. The authors, however, have strictly adhered to the original fundamental principles and structure of the first edition. Its great wealth in approved formulas for the numberless practical and useful preparations in the scope of the professional and commercial practice of pharmacy and the drug-trade has been fully maintained, adequately improved and much enlarged.

The make-up of the new edition in paper, print and illustrations is in the excellent style of the well known publisher. The time-honored compendium will, no doubt, meet with the same universal favor and appreciation as accorded for more than one generation to the first edition of its original author and will continue in its useful mission as the most widely recognized and used standard guide in its special domain of application. *Fred. Hoffmann.*

COMMERCIAL ORGANIC ANALYSIS. A treatise on the properties, proximate, analytical examination, and modes of assaying the various organic chemicals and products employed in the arts, manufactures, medicine and concise methods for the detection and determination of their impurities, adulterations and products of decomposition. By Alfred H. Allen. Second edition, revised and enlarged. Vol. 4: proteids and albuminous principles, proteoïdes or albuminoïds. One vol., pp. xi, 584. P. Blakiston's Son & Co., Philadelphia, 1898. $4.50.

Allen's commercial organic analysis is so well and so favorably known that it requires no introduction to analytical chemists anywhere. The one disappointing feature about the work was that some of its volumes were out of print and therefore could not be had by many chemists who felt sadly in need of it. This was occasioned by two things: First, the volumes were sold separately, and secondly, it required more time than the author has calculated to completely revise the first edition. He, therefore, did not find time to revise these volumes out of print, neither did he want them to be merely reprinted without revision.

Fourteen years may seem a long time to spend in the revision of any work, yet any one acquainted with the character and scope

of this treatise will rather marvel at the courage that any one person should attempt either to write or to revise it. The author has guarded against criticism in this direction in two ways. He has secured the cooperation of a number of specialists who have assisted in one capacity or another. Thus e. g. the chapters on Proteids of urine and on Proteids of plants were submitted to the perusal and criticism of Dr. James Edmunds and Dr. W. J. Sykes respectively. Furthermore he gives numerous references, abstracts and even quotations from original articles.

The work, as its secondary title states, is not only an analytical guide, but is in certain measure a general treatise as well of the subjects under consideration. It is evidently not intended for the analyst who wants to make an assay according to rule of thumb without an understanding of the chemistry involved, but for the rational analytical chemist.

Volume four covers broader ground than its title Proteids etc. may indicate to some. After a discussion of the general characters and the classification of proteids, and of the proteids of eggs, blood plasma, plants and milk, milk as such receives as much space as all the previous chapters taken together. Thus e. g., the various kinds of milk, abnormal cow's milk, infected and diseased milk, determination of non albuminous constituents of milk, (ash, fat etc.), preservatives, etc. come in for their share of attention. In a similar manner milk products, meat and meat products, proteids of digestion, haemaglobin and its allies (incl. e. g. the chemico-legal detection of blood) are treated. The second large subdivision, the proteoïds and albuminoïds, include the collagenes or gelatoids, the fibroïds, the chitinoïds and keratin substances.

The usefulness of the work has so long been established that it requires no further recommendation than its name carries with it.

E. K.

Die wichtigsten vegetabilischen Nahrungs- und Genussmittel mit besonderer Rücksicht der mikroskopischen Untersuchung auf ihre Echtheit, ihre Verunreinigungen und Verfälschungen von Dr. A. E. Vogl. Mit 271 Holzschnitten. Urban und Schwartzenberg. Berlin und Wien. 1899.

One is so often obliged in America to listen to exhortations in praise of the practical and to hear slurs cast on the impractical

scientist that any generally recognized practical value in the scientific comes somewhat as a relief. The average American would place perhaps at opposite ends in the scale of practical achievement the matter-of-fact Yankee and the visionary German.

In many cases, however, the former, if candid, is obliged to admit that the patient, thoroughgoing, scientific method of operation of the latter in the long run yields more permanent, practical results than mere ready, superficial ingenuity.

A case in point is the purity of foods, drugs and similar products. Without doubt the American is swindled more frequently and with less difficulty than any body else supposed to regard the difference between genuine and false. This may in part be due to the fact that the swindler is one of the practical stamp of men, for such he undoubtedly is. It means to a greater extent still that with us the means of protection are not readily at hand. This means of protection is found in a scientific training in chemistry and in the use of the microscope. Were these scientific means thoroughly in command of large numbers of dealers in foodstuffs and drugs, it would be far more difficult for fraud to flourish. Little interest is felt in the subject of pure products so long as these do not threaten life itself. This apathy seems difficult to explain in any way especially creditable to the practical man.

As a result of this situation, probably no work in the English language exists covering the ground covered by so many excellent works in other languages, describing in a close, scientific manner foodstuffs and drugs as they should be in the whole or powdered condition and the adulterations to be found in them.

As is usually the case when patient, close, scientific, plodding work is needed, the Germans have gone on far ahead, and in the very practical matter of pure foods and drugs, we must go to them for instruction.

The work under discussion is a volume of about 575 pages illustrated with 271 woodcuts. It is an outgrowth of the author's activity in connection with the working out of an outline for the Codex alimentarius Austriacus. This outline grew to the dignity of the thick volume at hand. The largely increased attention being given to the purity of foodstuffs as well as the growing number of those familiar with the use of the microscope have encouraged the author to write

the book. It is in a very full sense the result of the author's own extensive investigations, a fact giving to the work an added value.

Some idea of the scope of this book may be obtained from an enumeration of the chief divisions into which it falls. Ground products of cereals (1 to 153); ground products of leguminous origin (157 to 167); starches and sago (167 to 194); garden vegetables (196 to 209); the common edible fungi (211 to 218); fruits (221 to 240); narcotic luxuries (242 to 343); spices (346 to 534); the commonest substances capable of identification that are used in adulterating spices (536 to 564).

As would be inferred from the space devoted to these subjects, the treatment is very thorough. The normal anatomy of the whole product, the microscopic characteristics of the powder and the chemical behavior of the substance, together with the points of difference separating the false article from the genuine, are worked out in detail, the text being abundantly illustrated with very high-grade wood cuts.

It would be difficult to speak in terms of too high praise of the manner in which the author has acquited himself of the task assumed in undertaking this work. The type and paper are also unusually satisfactory, especially for a piece of German book making.

Filling as it does so satisfactorily a place of great importance in technical botanical literature, this book will doubtless be given a hearty welcome from many quarters. To the pharmacist it will be of great value, the chapters on spices and narcotic luxuries and their adulterations being of especial usefulness. *Rodney H. True.*

THE MEDICAL NEWS POCKET FORMULARY FOR 1899. Containing sixteen hundred prescriptions representing the latest and most approved methods of administering remedial agents. By Dr. E. Quin Thornton, Demonstrator of Therapeutics, Pharmacy and Materia Medica in the Jefferson Medical College, Philadelphia. In one wallet-shaped volume, strongly bound in leather, with pocket and pencil. Lea Brothers & Co., Philadelphia. Price, $1.50, *net.*

A paragraph from the author's preface may well serve to introduce it: "In preparing this little volume there has been no intention that it should replace individual thought on part of the practitioner, whose diagnosis of each case must govern the character, quantity, and combination of the remedies selected. That there is a broad

and legitimate field of usefulness for works of this character is self-evident, for even the best-informed practitioner may at times overlook an appropriate drug, and the young physician will perform his duty better, both to his patient and himself, if he has at hand the collective experience of the profession. No man of independent thought will be hindered in his development by having the best information placed conveniently at command."

This reads like a truism. Those not of "independent thought" almost invariably possess enough shrewdness to find an ass's bridge somewhere. An apology, therefore, does not at all seem necessary for a work of this kind. The names of diseases are arranged alphabetically and under each will be found a number of prescriptions covering a variety of conditions. A table of doses precedes the body of the work. Quantities are given in both the apothecaries and metric systems. The book is very neatly gotten up. *E. K.*

FORMULAIRE DES MÉDICAMENTS NOUVEAUX POUR 1899 par H. Bocquillon-Limousin. Avec une introduction par Dr. Henri Huchard. 1 vol. in—18 de 324 pages. Librairie J. B. Bailliere et Fils, Paris. 1899. Cartonné Fr. 3.00.

With the present year, this formulary passes through its tenth revised edition. Reviews of recent editions will be found in this journal: vol. 14, p. 118; vol. 15, p. 103; and vol. 16, p. 162. Like its precursors, the tenth edition has a number of changes, especially additions, to show up for last year's progress in materia medica. It goes almost without saying that many if not most of these are synthetic chemicals such as benzcaïne, captol, cosaprine, glycerophosphate of quinine, saligallol, thiocol etc. The reaction in favor of vegetable materia medica, however, is also making itself felt in this annual. This is evidenced not only in the desire to make colonial possessions yield up their medicinal treasures, but in the reintroduction of domestic vegetable drugs that have been used only as household remedies or not at all for remedial purposes. Supplementary to this formulary, the same firm publishes the Formulaire des médications nouvelle by Dr. Gillet which treats of such subjects as antisepsis, general and local, serum therapy, vaccination etc. Dr. Huchard wrote in 1890 of the older formulary: "J'ai lu, j'ai vu . . . et j'ai été vaincu." The two supplementary formulaires he calls in his happy vein "deux frères jumeaux." *E. K.*

SUPPLEMENT.

Scientific Organizations.

The Pharmaceutical Society of St. Petersburg, at its annual meeting, elected Professor Charles Caspari, of Baltimore, General Secretary of the American Pharmaceutical Association, as honorary member. The other American honorary members of this society are Dr. Fred. Hoffmann, now of Berlin, elected in 1882; and Professor J. P. Rennington of Philadelphia, elected in 1895.

It is reported that the **Hofmann House,** which is being erected in Berlin in honor of the late Professor of Chemistry, is to be ready by October 1900. A marble statue of the deceased is to decorate the interior. The house is to be the home of the German Chemical Society. Besides a large hall it is to contain a room for the directors, a business office, a library, editorial rooms and a chemical laboratory. The third and fourth floors have been leased for ten years to the Berufsgenossenschaft der chemischen Industrie and to the Verein zur Wahrung der Interessen der chem. Industrie. For the erection and maintenance of this "Home" a corporation with a capital of $150,000 has been organized.

University of Wisconsin. — In the catalogue issued last summer, the School of Pharmacy announced that a course weekly lectures on The economic functions of the state would be given by Dr. B. H. Meyer of the School of Economics, Political Science and History. Inasmuch as this course has recently been completed, it may be of interest to indicate somewhat more fully than was done in the catalogue the ground that was covered. The following statement, kindly prepared by Dr. Meyer, may serve this purpose.

"The course was opened with a discussion of the conception of the state, and of the terms trade, industry and professions. The functions of the state in general were defined and their development illustrated by the study of national budgets with especial reference to the budget of the United States government. Among the economic functions of the state which were studied in detail were those of granting patents, copyrights and trade-marks. Some attention was given to the evolution of "patent" medicines and the legal restrictions placed upon there manufacture and sale in different countries. This closed the theoretical and general part of the course.

The remainder of the course was devoted to a study of the development of pharmaceutical legislation in England, Germany and Wisconsin. Early administrative and fiscal regulations were examined with the view of throwing light upon the profession of pharmacy. The gradual rise of the modern pharmacist and of modern pharmaceutical legislation was followed out step by step. Investigations, petitions and debates of the German Reichstag were summarized, and every English law upon the subject from earliest times on was analyzed. Finally, the history of legislation in Wisconsin was studied."

The questions given at the final examination, which covered the

second half of the course, will add to an understanding of the work done and are therefore appended.

1. Approximately when and where were the first apothecaries established in continental Europe?

2. Name the chief provisions of an apothecary's oath, in Germany, in the fifteenth century.

3. Give evidence to show the public nature of the apothecary's business in Germany.

4. Distinguish between real and personal privileges.

5. Discuss the education of early German apothecaries.

6. Discuss the condition of pharmacy in Germany at the present time.

7. Explain the connection between grocers and apothecaries in early English history.

8. Describe the supervision exercised over the early English apothecaries.

9. Give a brief account of the circumstances leading to the first act of the Wisconsin legislature relating to pharmacy.

10. What are the chief defects of present pharmaceutical legislation in the United States?

Am. Pharm. Assoc. — The following circular has been issued by the officers of the Committee on Membership of the A. Ph. A. Persons desiring to join the association can apply to local members or to any one of the officers of this body.

"At the Forty-sixth Annual Meeting of the Association the undersigned Chairman and Secretary of the Committee on Membership decided to make a special effort in the line of interesting a larger number and increasing the usefulness of the Association.

The Association now numbers nearly 2,000; there should be not less than 5,000 active working members. No association in any way connected with pharmacy, in this or any other country, gives to its members as much as this. The Annual published Proceedings, a volume of nearly 1,000 pages and sometimes more, contains matter of research, application, instruction and lucid explanation, and of such value and importance to every up-to-date pharmacist, that cannot be obtained elsewhere and that makes the volumes simply as a library of reference, not to mention its value as a book for study, that no progressive pharmacist can afford to be without.

Besides this Annual Volume, mailed free to every member once a year, the meetings of the Association are to each member, his wife or friends, who attend, an annual outing, which give a larger return in general culture, pharmaceutical, social and general education than can be secured in any other way by twice the amount in cost of time and money. Contact, consultation and consideration of varied or special matter, among and with such specialists, scientists or business men as may be desired, cannot be over estimated. The broadening and social influence, helpful and inspiring, always gives to the tired and over-worked pharmacist a peaceful, joyful rest, and a longer lease of life. It is the largest and most influential organization of its kind in the world.

Article 1, Section 2, of the Constitution, reads: "To encourage such proper relations among Druggists, Pharmacists, Physicians, and the people at large, as may promote the

public welfare, and tend to mutual strength and advantage."

Sec. 3. "To improve the science and art of Pharmacy by diffusing scientific knowledge among Apothecaries and Druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business."

Sec. 5. "To suppress empiricism, and to restrict the dispensing and sale of medicines to regularly educated Druggists and Apothecaries."

Sec. 6. "To uphold standards of authority in the Education, Theory and Practice of Pharmacy."

Chap. 7, Art. 1. "Every retail druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and those teachers of Pharmacy, Chemistry and Botany, who may be specially interested in Pharmacy and Materia Medica, who, after duly considering the objects of the Association and the obligations of the Constitution and By-Laws, subscribe to them, are eligible to membership; provided that no one, whose name has been dropped from the roll for non-payment of dues, shall be eligible for membership until payment has been made of the three years' dues for which he is in arrears."

H. M. Whitney, Chairman.
Geo. W. Kennedy, Secretary.

Bibliography.

Increased interest in collonial affairs on part of the Germans is manifesting itself in scientific literature. Die Kulturgewächse der deutschen Kolonien und ihrer Erzeugnisse by Prof. R. Sadebeck has recently been published by Gustav Fischer of Jena.

Rezept-Sünden und ihre Folgen by Prof. Binz, Director of the Pharmacological Institute at Bonn, which was so favorably received only a short time ago, now appears in its second edition. It is published by A. Hirschwald of Berlin.

More timely than either author or publisher could imagine is the article on The Samoa Islands and its inhabitants in the January number of Velhagen & Klasings Monatshefte. The illustrations give interesting glimpses of vegetation and life including the preparation of kava kava by Samoan girls.

On pp. 895—897 of the Pharm. Ztg. of last year Theo. Husemann discusses at length the spelling of the word "bismuth." He states that the **h** could have sense only if the word were of Greek origin. He claims it to be a latinized form of a German word which was spelled without the **h** in writings on mining and metals at the beginning of the 16. Cent.

Studien über die Vanille by Dr. Walter Busse is a reprint of the Arbeiten aus dem kaiserl. Gesundheitsamte, Bd. XV. and like the serial is published by Julius Springer of Berlin.

Hugo Maubach who not long ago published an account of the role which the German apothecary has played in German literature (See "Das Charakterbild des Apothekers in der Litteratur", vol. 16, p. 40) has recently contributed

an article on Die Pharmacie im Dienste der Alchemie to the Pharm. Ztg. The list of apothecaries who contributed to alchemy begin with the Arabian chemist and physician, whom Maubach calls the father of pharmacy proper. Basil Valentine also is said to have had pharmaceutical connections. Antonius Tarvisinus of Venice; Andreas Bletz of Baul; Raimund of Cologne; Christoph Reibehand of Gera; Michael Morgenbesser of Wolan; Georg Starkey of London; Joh. Kunckel von Loewenstein, whose name is closely connected with the history of phosphorus; Joh. Friedrich Boettger, the discoverer of porcelain; Gottfried Hermann Braun; Horter and Reussing; all of these were either apothecaries or assistants who assisted directly or indirectly in making alchemistic history. The author suggests that the modern apothecary would find but little time for similar indulgences and concludes with the wish that some pharmaceutical adopt might succeed in discovering the golden tincture of contentment.

The third American, from the last German edition, of Richters Organic chemistry will soon be available. Vol. I. including the "aliphatic series" is about ready, whereas vol. II., including the "aromatic series," is in preparation and to be issued in the course of this year. This, the authorized translation by Prof. Edgar F. Smith of the University of Pennsylvania is published by P. Blakiston's Son & Co.

That the "nomenclature question" so troublesome to American botanists is not their sole possession is evidenced by Dr. Otto Kunze's pamphlet recently distributed, in which he attacks with especial vigor the rulings and applications of rulings made by Dr. Engler, editor of the Pflanzenfamilien. This pamphlet in its title gives a foretaste of what follows in the text. "Liste seit 1891 bereits anerkannter legal renovirter und 'nicht verjährter' phanerogamer Gattungsnamen, welche selbst nach Engler's neuesten Regeln in dessen "Pflanzenfamilien" hätten Aufnahme finden müssen, soweit dies nicht schon stattfand."

Persons interested in pharmaceutical antiquities will await with much interest the work on Pots de pharmacie by M. P. Dorveaux, librarian of the Superior School of Pharmacy at Paris. The book may make its appearance in the course of the next year.

CATALOGUES RECEIVED:—

F. A. Brockhaus–Leipzig. Monthly list of new books. Jan. 1899.

J.-B. Baillére & Fils—Paris. Catalogue gênéral des livres de sciences.

Martin Boas — Berlin. Medicinischer Anzeiger.

Georges Carré et C. Naud—Paris. Catalogue général: médecine sciences etc.

R. Friedlaender & Sohn—Berlin. Bücherverzeichniss No. 428: Physik.

Lemcke & Buechner—New York. Monthly bulletin of world-literature. 1898, No. 11 and 12.

The Macmillan Company—New York. 1) Complete catalogue of publications and importations; 2) Announcements of new books; 3) Book reviews, Feb. '99.

Pharmaceutical Review.

VOLUME 17. APRIL, 1899. NUMBER 4.

Editorial.

Much has been said and written about the necessity "of taking up the white man's burden." No matter how poor or how good an opinion we may have of the motives that led to the adoption of this "burden", if we look at the ultimate result, we may not regret the foothold the Anglo-Saxon race has acquired almost everywhere, though some of her agents of civilization were devils in disguise. Who would have thought, however, that native Indian chiefs would teach England a lesson in pharmacy before the close of this century, a lesson that deserves to become known throughout the pharmaceutical world. We desire to call special attention to the recent opening of what we should call a school of pharmacy in Western India. The college building, the quarters of the Director, and the outhouses are the gift of an Indian chief. Other chiefs have provided the equipment and voted the necessary annual allowance for its maintenance (see p. 186). More than that, in order to secure students, thirteen scholarships are provided by various states. Where is there a state in Christendom that has done relatively as much for the advancement of pharmacy, where private munificence and legislative liberality have joined hands for the advancement of our calling. India is teaching the Christian Anglo-Saxon a lesson that we should do well to take to heart. What is more, this is but the beginning of an intellectual renaissance that seems to be in store for a people whose early civilization more and more excites our wonder and admiration.

The wellnigh proverbial significance of "German thoroughness" is in danger of losing its meaning, at least as far as pharmaceutical journalism is concerned, if German editors continue in their ignorance of the English language. Not only do they fail to comprehend our institutions, but they do not even understand ordinary English and thus subject themselves to all sorts of ridicule, making e. g. a new remedy out of the title of an historic note. (See vol. 15, p. 35.) Somewhat more than a year ago there appeared in this journal (vol. 15, p. 135) an article on "The estimation of menthol in oil of peppermint" by Dr. Clemens Kleber of the laboratories of Fritzsche Bros., Garfield, N. J. A German journal abstracted the article and assigned it to the pen of a certain N. J. Garfield. A French journal, which copied from the German, was satisfied with one initial and so Dr. Kleber finally became Mr. J. Garfield. It is not strange that Germans have queer ideas about America. But German editors not only make ridiculous errors in small things as those here alluded to, but in more important matters they even do not care to get at the truth. The most important German pharmaceutical newspaper recently published an article about pharmaceutical education in America by a person who evidently knew little more about education in this country than the editor of the paper in which this article was published. The article did not contain any particular errors of facts, because it was evidently made up largely from college announcements and similar sources of information. The author, however, knew little more about pharmaceutical education than a trained human parrot. The editor who had the best opportunity imaginable to learn all that was necessary for the mere asking evidently never dreamt of such a thing. Many an American editor may not have the scholarly training of the learned German confrère, but most of them would have the common sense to ask if they could get what they needed for the mere asking. The Review by no means claims infallibility, but if German editors continue their present practices with regard to this country, it will some day expose them without respect of person. If the Germans think they can afford to remain in ignorance of this country, well and good. They cannot expect, however, to foster good will by constant misrepresentations.

Two Lives but One Lesson.

Modern mankind in general, and students of the middle ages in particular, have often wondered why it was possible that the science and culture of the ancients should have been dead and buried for a thousand years, a dark period indeed during which mankind was practically condemned to a standstill; whereas in our own time man is possessed of the feeling, amounting almost to a conviction, that since the renaissance we have assumed a path which insures an uninterrupted progress not only to broader and deeper knowledge, but also to a higher civilization in general. An important reason that lends well nigh certainty to this belief lies in the fact that modern science has given life to an industry such as the antique world had no conception of. The industrial pursuits of the ancients were of the nature of trades not permeated by science. By making man the master of the natural forces, science in modern times underwent a much more intimate amalgamation with civilization in general, than was the case during antiquity.

What science can do for a nation has been demonstrated in a most remarkable manner in Germany. Since the battle of Jena, when Germany was nothing more than a geographical conception, the German nation has not only advanced to political supremacy in the establishment of the German Empire, but since that remarkable day at Versailles in 1871 it has also passed to industrial supremacy on the European continent. The battle of Sedan has taught the French nation what the Germans learned at Jena, and stimulated by the remarkable progress of her neighbor, France is now advancing the sciences to an unprecedented degree in order that the advancement of science may react favorably on the life of the nation as a whole. England is recognizing the need of similar reforms. The words "Made in Germany" have at last roused the conservative Englishman. Only last fall, Sir J. Norman Lockyer, in an address before the Royal College of Science, warned the English nation not to wait for a Jena or a Sedan either on the field of battle or in the industrial field.

That American industry in general, and pharmaceutical industry in particular, has not been totally unmindful of the lessons to be learned in Europe, can be demonstrated by the fact that all of our larger manufacturing establishments have their scientific expert or

experts. That e. g. many of the chemists of these institutions are Germans, may not be to the credit of American science, but it is to the credit of the manufacturer who has not allowed himself to be crippled by false pride. Pharmaceutical colleges have, no doubt, already learned a lesson from such appointments.

In the writer's mind there exists no doubt whatever of the propriety of reminding the American pharmacist at any time of the necessity of being constantly wide awake and ready to learn from the progress of science. There is a special reason, however, at the present time for calling attention to the well nigh axiomatic truth expressed in the introduction. The demise of two men whose names have been household words with American pharmacy for a generation and more is certainly sufficient cause for such reflections.

In our own country the death of Hervey C. Parke at a mature age has vacated the presidency of possibly the largest pharmaceutical firm in this country. Born as the son of a physician in Bloomfield, Mich., he received his education in his native town and in Buffalo. At the age of seventeen he began a somewhat miscellaneous career in life. He started out as an employee of an upholsterer in Buffalo. After the death of his parents, he returned to his former home, taught school for a time, was clerk in a hardware store and then in a general store, then the financial manager of a mining company, and finally a dealer in mining hardware.

After this apprenticeship of twenty-two years in general business, Mr. Parke began his work as a master. Duffield, Parke and Co. were successful manufacturers of chemicals in Detroit for four years. when Mr. Duffield's interest was purchased and the firm became known as Parke, Davis & Co. From the small three-story building and the few employees of that time, the business has grown until now three entire city squares are covered with laboratories and over twelve hundred employees are engaged in the manufacture of its products. Whether Mr. Parke has ever been connected with pharmacy in any other than a purely business manner, the writer has not been able to learn. His relation to American pharmacy has been primarily that of a heavy stockholder and president of a large pharmaceutical manufacturing establishment, whose name and products have carried American pharmaceutical progress to all sections of the globe.

Mr. Wilhelm Merck, since 1885 the head of the firm of Merck and Co. of Darmstadt, was born October 11, 1833. He received his

general education in the "Gymnasium" and the "Gewerbeschule" of his native town. He was introduced into the science of chemistry by the older Fresenius. The study was continued under Loewig at the University of Breslau, under A. W. Hofmann, then at the Royal College in London and concluded under Wurtz in Paris. After the death of his older brother George in 1873, he assumed control of the laboratories and works; and in 1885, when his brother Karl died, he became the head of the house, the affairs of which he continued to manage with the assistance of his nephews. Though not an apothecary himself, he was a lineal descendant of Jacob Friedrich Merck, who in 1668 founded the Merck Pharmacy in Darmstadt, from which has grown the present chemical works. His father apparently possessed the title of apothecary.

World wide success has thus been achieved by two men of totally different stamp in some respects. The one a self made man, who had to earn the money to satisfy his desires for an education, such as the meagre facilities of country- and high-school offered; the other drilled in the classics, and a chemical student of some of the foremost masters of their science in Europe. The one plunges into a new line of activity at middle age and creates practically a new industry, making a business success of the venture; the other assists in the development of an industry, the foundation of which was laid by one of his ancestors two centuries ago, and in the same town in which the Merck Pharmacy was founded in the seventeenth century. Working in entirely different spheres, under very different social and economic conditions, both achieve remarkable success.

Besides their success, both men seem to have had a common characteristic. Though busy men, paying strict attention to their business duties, they seem to have found ample time for public affairs and philanthropy. They seem to have been representative men in the best sense of the term. To pharmacists their lives are of special interest because they are typical of the remarkable extent of the evolution through which their calling has passed during the last generation. The history of the two houses, of which these two gentlemen were the respective heads, affords ample food for reflection.

Indexing of Pharmaceutical Literature.

The need of an index to pharmaceutical literature has, no doubt, been felt by others than the scientific investigator. The specialist, as a rule, finds one way or another of recording references to current literature of special interest to himself, be it on the margin of one or several of his favorite hand books, or on cards or slips of paper, or in a special book. Such work is frequently interfered with and unsatisfactory at the very best, because it is well nigh impossible to peruse all journals systematically and to take the necessary notes. Besides such indexing is as a rule of value to few if to any other persons than the one who made the index. If the systematic work accomplished by individuals could be made useful to others, much valuable time could be saved every year by hundreds and even thousands of scientific students. Cooperation is necessary here as well as in so many other lines of human activity in order that the desired end may be attained.

During the last few years the Review and the Pharmaceutical Archives have published several bibliographies, also a list of reagents and reactions known by the names of their authors. A chemical bibliography of morphine from 1875 to 1896 was prepared by Mr. H. E. Brown under the direction of Professor Prescott.* Bibliographies of santonin† and of apiol‡ have been prepared by A. Van Zwaluwenburg under the direction of Professor Schlotterbeck. The chemical instructional force at Ann Arbor with the aid of advanced students has done much other valuable work along this line, some of which at least could be made available for the purposes of an index. The list of reagents and reactions referred to above, which is a translation by Mr. Fischer, Instructor in Practical Pharmacy at the University of Wisconsin, of Dr. Altschul's list in the Pharmaceutische Centralhalle, was not found as satisfactory as its German origin would lead one to expect and has since been made the subject of much bibliographic investigation. Not only have numerous additions been made, but hundreds upon hundreds of references have been added, thus giving the index a value which the original list did not at all possess. A thoroughly revised and improved list may,

* Ph. Review, 17, pp. 204 & 225; also Pharm. Archives, 1, pp. 17, 25 & 49.
† Pharm. Archives, 2, p. 1.
‡ ibidem, p. 23.

therefore, be expected in a not distant future. This index has also given rise to an index of bibliographies of the authors. Much work has also been done during the past semester on an index of new remedies, which when farther advanced ought to prove exceedingly valuable. The list of popular names of Brazilian medicinal plants* by the veteran writer on Brazilian materia medica, Dr. Peckolt, makes a beginning in this direction. It is hoped that this list, which has been received with favor in Germany as well as in this country,

Squibb. 1887.

Ephemeris, p. 965.

Opium Assay.

Extract with cold water, filter and evaporate to small bulk, then add successively alcohol, ether and ammonia and set aside 24 hours. The morphine is removed and weighed as such.

Fig. 1.

can be made more valuable still. A list of popular names of American plants is also in course of preparation.

Though small, when compared with the possible scope of such an undertaking, the beginning made seems creditable and is deserving of support both in a literary way and financially. Reprints of some of these bibliographies can be had from the publishers of this journal at a slight expense. The most expensive part of a complete index when compiled from such bibliographies and lists are the library cards and the card cases for their proper arrangement and use. The card which the writer invariably uses and which, if he is not mistaken, is largely used in most libraries, is No. 331 of the Library

* ibidem, vols. 1 & 2.

Bureau.* Fig. 1 shows how the various items of e. g. the bibliography of morphine can be used to advantage with such a system of index cards. A guide card for morphine should precede all of the cards on this subject and may be supplemented by a number of subguides. The great advantage of the card system will be readily realized if it is stated that the original list has already been twice supplemented. Furthermore it has not yet been brought up to date since the second supplement including the year 1897 was published.

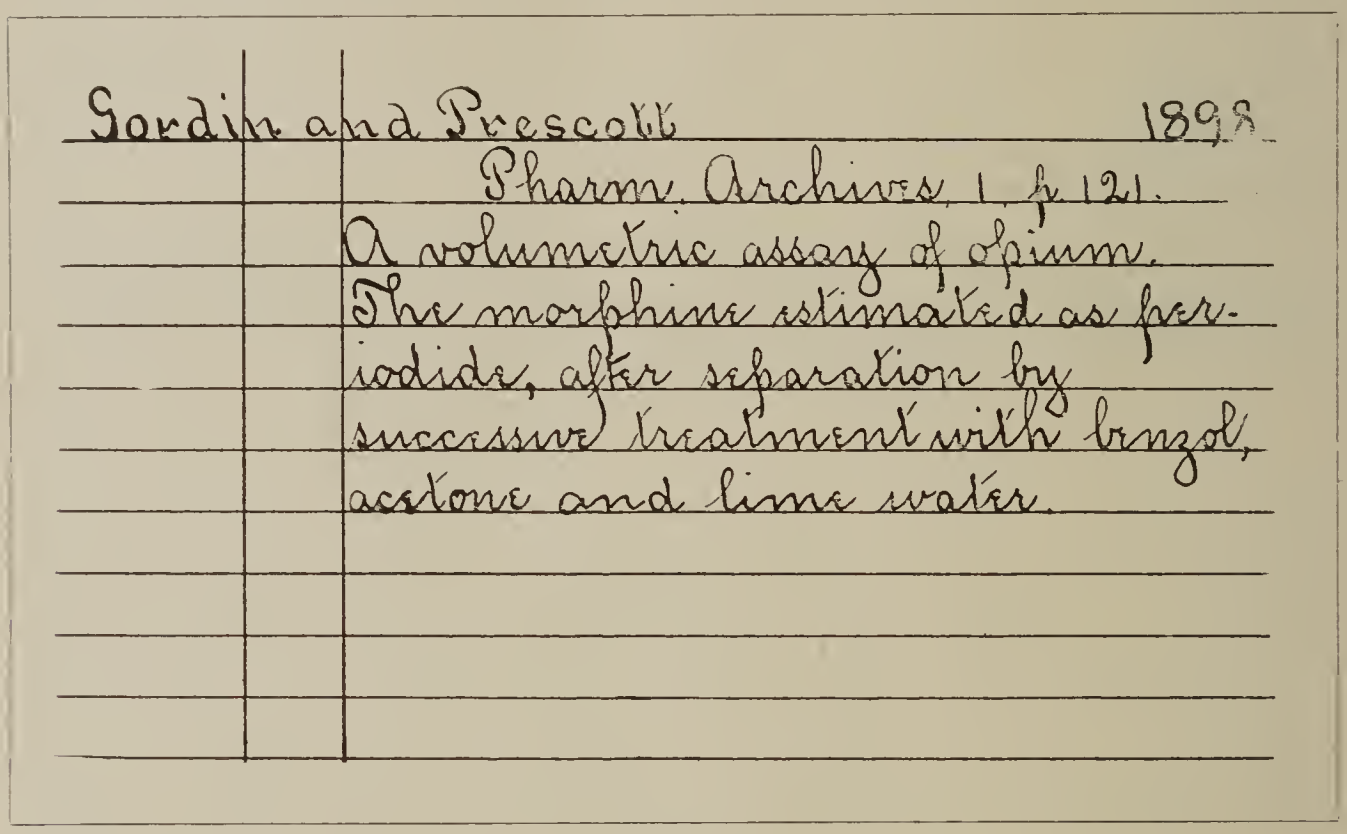

Gordin and Prescott 1898
Pharm. Archives, 1, p. 121.
A volumetric assay of opium. The morphine estimated as periodide, after separation by successive treatment with benzol, acetone and lime water.

Fig. 2.

Current additions can also be made in writing as shown by Fig. 2. The cards are somewhat more than half an inch wider than represented by these figures.

If such a card index were started in the library of every school and college of pharmacy and in the laboratories of pharmaceutical manufacturers, we could, with some systematic cooperation, have an invaluable index to pharmaceutical literature within ten years. In the line of general indexing, American libraries have done much more work than the libraries of any other country. May we not hope that American pharmacy may take the lead of other countries in this direction. *E. K.*

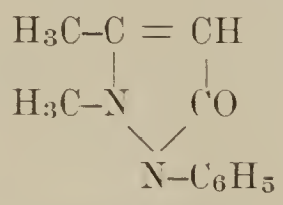
* Persons interested will find styles of cards, guides, cases etc. in the catalogue of this firm, Boston, Chicago, etc.

Pharmacology and Toxicology of the Pyrazole Derivatives.*

By *Virgil Coblentz.*

Substitution Product of Antipyrine.

It will be seen that four classes of derivatives of antipyrine are possible, according as a hydrogen atom of either of the two methyl groups, of the phenyl group or the hydrogen of the pyrazole nucleus is replaced by radicles.



If these substituents consist of alkyl groups, the antipyretic action still remains but modified in intensity.

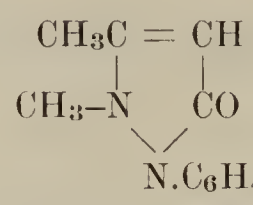
Upon sulfonating, antipyrine yields antipyrine-sulfonic acid

and as anticipated† a less toxic product is obtained which destroys the irritability of the central nervous system and paralyses the heart and respiration organs of cold blooded animals.

When we consider that the introduction of an oxy-methyl ($O.CH_3$) or an oxy-ethyl ($O.C_2H_5$) group into antifebrine ($C_6H_5.NH.COCH_3$) results in the elimination of its toxic side effects, as in methacetine ($C_6H_4(OCH_3).NH.COCH_3$) and phenacetine ($C_6H_4(OC_2H_5)NH.COCH_3$), the same inference might be drawn if a para-alkyl-oxy-antipyrine was prepared, of the general formula

Thus meth-oxy-antipyrine and eth-oxy-antipyrine, which give all the general reactions of antipyrine, were found to possess antipyretic properties, but contrary to expectation, the intensity of action was too strong to be of any therapeutic value. The most successful competitor of antipyrine was found in the tolyl-di-methyl-pyrazolone or tolypyrine

* Continued from page 111.
† Comp. vol. 16, p. 474.

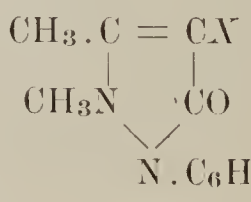


which differed from antipyrine in the replacement of its phenyl (C_6H_5) by a tolyl group ($C_6H_4CH_3$). The *ortho* compound has proven itself to be a reliable antipyretic and is somewhat less toxic than the para. The latter will kill cats in doses of 0.18 to 0.2 gm., while the ortho compound is readily tolerated in doses of 0.6 gm. Both of these isomers paralyze the central nervous system, and, while they affect the peripheral nerves, this does not extend to the muscles or heart. Methemoglobin is found in the blood.

Tolypyrine can be readily distinguished from antipyrine by the addition of a 15 percent solution of sodium hydrate to a 2 percent solution of the substance; a cloudiness results with the former, while the latter solution remains clear. Tolypyrine reduces the temperature in typhoid fever from 1 to 1.5° C., in 3 to 6 hours; it also acts as antirheumatic and antineuralgic, being frequently more efficacious than the better known antipyretics, Four grammes of tolypyrine represent six grammes of antipyrine in antipyretic effect; its greater activity might be ascribed to its lesser solubility, hence it is slower absorbed; the former is more irritating than the latter.

Tolysal, tolypyrine salicylate, was introduced in 1893 by Dr. Henning. Daily doses of 3 gm. did not exhibit any toxic action on rabbits. This remedy has shown itself to be thoroughly reliable in treatment of polyarthritic, subacute and chronic muscular rheumatism, also rheumatic neuralgia, in daily doses of 3 to 6 gm., particularly in cases where salicylic acid, salol or phenacetine have failed. In doses of 1 to 3 gm., it is an active anodyne and antifebrile. When administered on an empty stomach, nausea and vertigo generally result.

The pyrazol nucleus of antipyrine contains but one replaceable hydrogen, which can be substituted by halogens, a hydroxyl, a dimethyl-amido or other groups containing carbon. Thus,



X = Cl, Br, I, OH, $N(CH_3)_2$, etc.

of the halogen derivatives only the iodopyrine, $C_{11}H_{11}IN_2O$, possesses medicinal action, being useful in abdominal typhus and hectic fever. Its antipyretic effect is the same as that of antipyrine.

Oxy-antipyrine, $C_{11}H_{11}(OH).N_2O$, possesses feeble basic properties and the characters of phenol; it fails to respond to the color tests of antipyrine, since these depend on the presence of this replaceable hydrogen atom, which is now occupied by the hydroxyl group.

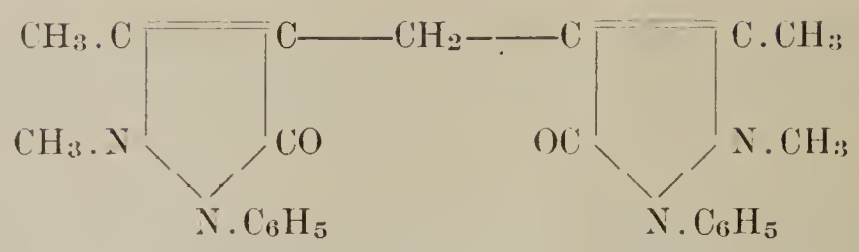
Oxy-antipyrine exhibits the same physiological action as antipyrine.

Among various possible amido derivatives benzylidene-amido-antipyrine, $C_{11}H_{11}N_2O.N{=}CHC_6H_5$, di-methyl-amido-tolypyrine, $C_{11}H_{10}(CH_3)N_2O.N(CH_3)_2$, di-methyl-amido-antipyrine or pyramidone, $C_{11}H_{11}N_2O.N(CH_3)_2$, possess antipyretic action. Pyramidone has received the most careful investigation. This body gives an intense blue-violet with ferric chlorid and an evanescent violet with nitrous acid. When given to frogs, it is 4 to 5 times as active as antipyrine, in cold blooded animals it produces spasms and finally paralysis. Different from antipyrine it paralyses the motor-intermuscular nerve endings. Small doses of pyramidone cause in rabbits an increase of blood pressure before and during the spasms. With dogs and guinea pigs it is 3 to 4 times as toxic as antipyrine, doses of 0.25 gm. proving fatal, producing convulsions and slowing of the heart's action. Considerable quantities of sugar are found in the arterial blood. In healthy individuals, this remedy scarcely influences the pulse and temperature. A dose of 0.5 gm. produces a slight flush in the face with perceptible perspiration; after twenty minutes the agent is recognizable in the urine.

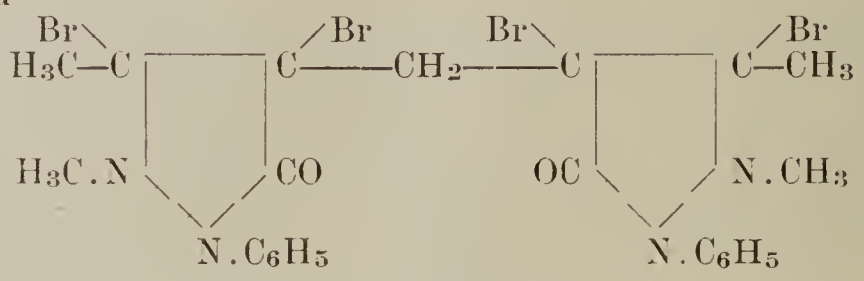
The antifebrile and toxic dose of pyramidone is ⅓ that of antipyrine, its action is milder, steadier and more prolonged. In chronic lung tuberculosis, daily doses of 0.3 gm. are usually sufficient; from two to three hours after administration a reduction of ½ to 2½° C. takes place, no side disturbances being noticeable after weeks of use. In typhus, pneumonia, influenza, scarlatina and acute rheumatism pyramidone gives excellent results. Doses of 0.5 to 1 gm. can be taken 3 times daily without any danger, for the relief of headaches and neuralgia, particularly convulsive pains, which cannot be removed by means of morphine and antipyrine.

Different from chloral, which forms additive compounds with antipyrine, other aldehydes react by coupling two molecules together under separation of one molecule of water.

Thus with formaldehyde, (H.CHO) and antipyrine formopyrine (methylene-bis-antipyrine) is obtained.

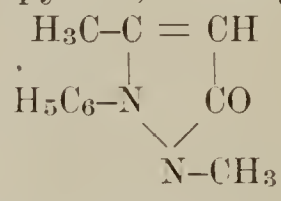


This body has not shown itself to be of therapeutic value, but its tetra-bromid

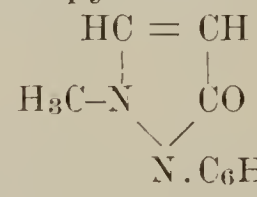


has found ready introduction as an iodoform substitute under the title of salubrol. Its antiseptic and antibactericidal properties are greater than that of iodoform, retarding the growth and destroying the cultures of the *Bacillus prodigiosus*, *Pyocyaneus*, *Tetragenus*, *Anthrax*, *Staphylococcus*, etc. It causes a rapid drying and healing of wounds, being best applied in the form of a 20 p. c. gauze.

Two derivatives of antipyrine, namely iso-antipyrine



(phenyl 2, -dimethyl 1, 3-iso-pyrazolone) and its lower homologue,



phenyl 1, -methyl 2, -iso-pyrazolone, because of their toxic characters have been dropped.

Percentage by Weight of Chloroform in Chloroform Emulsion.

By *W. O. Richtmann.*

One of the problems in the course on Applied Chemical Analysis required of our students is to identify the chloroform isolated by them from chloroform emulsion. As far as possible the other constituents must also be isolated and identified. This year a quantitative determination of the chloroform was also demanded. The much praised practice of measuring liquids and weighing solids, also the

peculiar character of the finished preparation seemed to preclude even an approximation of the specific gravity of the product by calculation. It was impossible, therefore, to ascertain the percentage strength by weight of the chloroform in the emulsion. Knowledge of the percentage strength by volume is well nigh useless for analytical work.

It was for this practical reason that a determination of the percentage strength by weight became necessary. The emulsion was prepared according to the directions of the U. S. Pharmacopœia, but the hquids after having been measured according to directions were also weighed. The volume and weight of water used also had to be noted, as well as the weight of the finished product. 200 cc. of emulsion were thus prepared by the writer and the experiment repeated by several students. It was thought of interest to see how much the work of persons not especially experienced in making pharmaceutical preparations would vary in so simple a problem. The results act also as a check on the writer's experiment which was not duplicated by himself. The accompanying table is self-explanatory and requires no comment. For comparison the quantities directed to be used by the Pharmacopœia are appended.

Operator.	Chloroform.		Oil of Almond.		Tragacanth.		Water.		Finished Product.	
	Wt.	%	Wt.	%	Wt.	%	Wt.	%	Wt.	%
K.	11.50	5.64	10.90	5.35	3.00	1.47	178.50	87.54	203.90	100.00
T.	12.30	6.01	10.90	5.29	3.00	1.45	179.50	87.26	205.70	100.00
E.	12.00	5.81	11.20	5.43	3.00	1.45	180.00	87.29	206.20	100.00
S.	11.90	5.75	11.20	5.46	3.00	1.45	181.00	87.30	207.10	100.00
H.	12.20	5.90	11.50	5.54	3.00	1.45	180.00	87.17	206.70	100.00
St.	12.00	5.85	11.10	5.41	3.00	1.46	179.00	87.31	205.10	100.00
R.	12.20	5.91	11.10	5.41	3.00	1.46	179.00	87.19	205.30	100.00
	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%
	8.00	4.00	12.00	6.00	3.00 gm.	—		—	200.00	100.00

Laboratory for Practical Pharmacy,
University of Wisconsin.

MONTHLY REVIEW.

Chemistry.

Sugar from Egg Albumin.—F. Blumenthal has succeeded in preparing from pure egg albumin, carefully freed from all traces of sugar and treated with barium hydrate and hydrochloric acid, a sugar which forms an osazone with phenylhydrazine melting between 194—204°. The hexose is probably l-glucose. The yield is from 8—12 p. c. of the albumin.

[Ph. Journ., 62, p. 95; from C. r., 128, p. 117.] *E. K.*

The Inversion of Sugar by Salts.—L. Kahlenberg, D. J. Davis and R. E. Fowler have studied the inversion of cane sugar by salts of aluminum, manganese, zinc, cadmium, nickel, copper, mercury and iron. Both the sulphates and chlorides were used in the majority of cases. The progress of the inversion was followed by means of the polariscope when the solutions were colorless and admitted of its use; in case of the colored solutions, the freezing-point method was employed after it had been demonstrated that this method yields reliable results. Several tests on colorless solutions, in which both the cryoscopic and polariscope methods were employed, gave practically the same results, showing that the former method can be used with success.

The paper reviews the previous researches on this subject by Walker and Aston (Jour. Chem. Soc. London, 67, p. 576) and by Long (Jour. Am. Chem. Soc. 18, pp. 120 and 693) who worked only with colorless solutions.

In general all the salts of the heavy metals possess the power to invert cane sugar. The chlorides invert faster than the sulphates. When the metals are arranged in a series according to the speed with which their salts of the same acid radical invert sugar, it appears that the order is similar to that of the electrochemical series. Aluminum is a notable exception. In spite of the high position of this metal in the electrochemical series, its salts invert sugar more rapidly than those of any other metal thus far tested.

As the speed of inversion is proportional to the acidity of the solution, or in other words to the number of hydrogen ions present, it is clear that the speed of the inversion affords a measure of the extent to which the dissolved salt suffers hydrolysis, that is to say is decomposed, by the water of the solution. The fact that aqueous solutions of the neutral salts of the heavy metals give an acid reaction when tested with litmus shows qualitatively that the salts are hydrolyzed to a certain extent. At 55.5° C. in solutions that were half normal with respect to sugar and half normal with respect to salt, the authors find that aluminum chloride is hydrolyzed to the extent of 0.73 p. c., aluminum sulphate 0.52 p. c., manganese chloride 0.003 p. c., cadmium chloride 0.024 p. c., nickel sulphate 0.048 p. c., copper sul-

phate and chloride 0.095 and 0.12 p. c. respectively, and mercuric chloride 0.2 p. c. The percentage of free acid increases with the temperature as the increase of the speed of inversion shows. Normal salts of the alkalies (including ammonium) do not invert sugar appreciably, the same is true of salts of the alkaline earths, and of those of zinc and manganese at ordinary room temperatures.

Since the pharmacist frequently deals with aqueous solutions containing salts of some of the heavy metals and sugar, as in the case of some of the official syrups and in compounding prescriptions, this article is of interest to him. In all such solutions the sugar present suffers inversion to a greater or less extent according to the age of the solution and the temperature at which is has been kept.

The cause of this inversion is (as has been mentioned above) the slight amount of free acid that is formed by the action of the water on the salt. It is evident too that in many of our summer beverages that contain both sugar and acid the inversion of the sugar takes place, and increases with the length of time the solution is kept. Again sugar in preserves suffers inversion because of the acid of the fruit. While it is well that these facts be known, no special alarm need be occasioned by them; for although by inversion cane sugar becomes fermentable, yet the digestive juices themselves create fermentable sugar from the starch of foods, and no doubt cane sugar taken into the stomach suffers inversion there to some extent because of the hydrochloric acid present. [Journ. Am. Chem. Soc., 20, p. 1.] *L. K.*

The Reagents for Cottonseed Oil.—Kiamil Mazher, an expert in the custom house at Salonica, reporting the results obtained with the various test for the detetection of cottonseed oil, comes to the following conclusions: 1. Nitric acid test (5 c. cm. oil + 10 c. cm. acid of specific gravity 1.40 and free from nitric products) does not give satisfactory results. 2. The reagent of Hirschsohn (to 5 c. m. oil 10 tr. of a solution of 1 g. chloride of gold in 200 c. m. chloroform) is not effective. 3. The test of Becchi (to 5 c. cm. of oil 25 c. cm. absolute alcohol and 5 c. cm. of a solution of 1 g. nitrate of silver in 100 c. cm. of absolute alcohol) gives doubtful results. Another form of this reaction (to 10 c. cm. oil, 1 c. cm. of a solution of 1 g. nitrate of silver in 200 c. cm. of absolute alcohol and 10 c. cm. of a mixture of 85 parts of amyl alcohol and 15 parts of pure colza oil) is better than the preceding, but the results are also doubtful. The methods of Millian, as also those of Tortelli and Ruggeri, are tedious and troublesome, without offering certain security or special advantage. 4. Only the reaction of Halphen (1. J. Pharm. Chim. 6, 390) where equal volumes of the oil under examination, amyl alcohol and carbon disulphide, the last containing 1 p. c. of sulphur, are mixed and heated for 15 minutes in a boiling solution of sodium chloride, the presence of cottonseed oil being indicated by the develop-

ment of an orange to red color, is to be relied upon, and being easily performed is recommended above all other reactions for the detection of cotton-seed adulteration.

[Der Seifenfabricant. From Oil, Paint and Drug Rep. 54, 21.] *W. A. P.*

The Reaction of Sodium Phosphate toward Phenolphtalein.—Brunner writes that he has never succeeded in obtaining a sodium phosphate having the composition $Na_2HPO_4.(H_2O)_{12}$, which did not produce a coloration with phenolphtalein although it is frequently stated that it should be neutral toward this indicator. In a recent experiment sodium phosphate (purissimum) was dissolved and rendered acid toward litmus by means of phosphoric acid and evaporated for crystallization. The crystals obtained from this acid solution were again dissolved and crystallized. While the addition of phosphoric acid and subsequent evaporation must certainly have removed any carbonate present originally, the crystals obtained were alkaline toward phenolphtalein: the motherliquor was faintly acid. The first motherliquor, although strongly acid to even litmus, yielded, upon concentration, crystals that were alkaline to phenolphtalein and retained this reaction upon being recrystallized. The author does not see how a neutral salt can be obtained.

[Fresn. Ztschft. 37, p. 740.] *W. A. P.*

Detection of Methyl Alcohol in Spirit. — By condensing with dimethyl-aniline the ethylal or methylal produced on oxidising mixtures of ethylic or methylic alcohols with potassium bichromate and sulphuric acid, A. Trillat obtained from the latter tetra-methyl-diamido-diphenylmethane, which, on oxidation, gives a persistent blue color, becoming more intense on warming. Ethylic alcohol gives a body which, under like conditions, gives a blue color that is fugitive on warming. The detection of methyl alcohol in spirit, based on these reactions, is conducted as follows: Twenty cc. of the alcohol are mixed in a flask with 300 cc. of distilled water and 30 gm. of potassium dichromate. When cold 100 gm. of 20 percent sulphuric acid are added, and the mixture, after standing for an hour, is distilled, the first fraction being rejected. The distillate is exactly neutralized with soda, and again distilled almost to dryness. The distillate is diluted to 400 cc.; 100 cc. of this is taken and introduced into a small flask with 2 cc. of pure dimethyl-aniline and 1 cc. of 10 percent sulphuric acid. The flask is hermetically sealed and heated on the water bath to 65° to 70° C. for five hours. The liquid is then made alkaline and excess of dimethyl-aniline driven off with a current of steam. A small portion of the liquid is then acidulated with acetic acid and oxidised by means of lead dioxide suspended in water.

[Pharm. Journ. 1898, p. 345; from Comptes rendus, 127, p. 234.] *E. K.*

The Solubility of Silver Chloride.—H. C. Hahn has found that a solution containing 475.3 grams of $CaCl_2$ in one liter dissolves 2.835 grams silver

chloride at 0°, and 8.147 grams at 100°. It is stated that the solubility is greater in saturated solutions of magnesium chloride.

[T. Q.'s Rev. of Am. Ch. Research, 1898, p. 82;
from Eng. Min. J. 65, p. 434.] *E. K.*

Oil of Tangerine Orange.—E. J. Perry gives the sp. gr. as 0.8589 at 15.5° and an optical rotation of +70° 47′ in a 100 mm. tube, figures that correspond with those given by Schimmel & Co. He collected a deposit of yellow crystals which melted at about 70°.

[C. & D., 54, p. 420.] *E. K.*

Peppermint Oil.—G. Gmelin emphasizes the well known fact that peppermint oil loses its solubility even in 90 p. c. alcohol upon standing for a short time. [Apt. Ztg. 14, p. 26.] *E. K.*

Otto of Rose.—An illustrated article on the gathering of roses and the distillation of the oil in Bulgaria with a report of the prospects for the present year and a note on adulteration.

[C. & D., 54, pp. 420 and 418.] *E. K.*

Peach-Kernel Oil.—This oil is reported to be imported into England largely from the southern parts of France. It is claimed that the test of the B. P. will readily distinguish between it and the true bitter almond oil.

[C. & D., 54, p. 375.] *E. K.*

New Eucalyptus Oils.—R. T. Baker, Curator of the Technological Museum, Sidney, has described and figured two new species of eucalyptus allied to *E. obliqua*. These he calls *E. dextropinea* and *E. lævopinea*. The former has a fibrous, persistent bark and inferior timber of a dark brown color, and the volatile oil (0.85 p. c.) consists largely of d-pinene, eucalyptol being entirely absent. *E. l.* has a less fibrous but brittle bark, a very hard, close-grained, pale brown timber. The volatile oil (0.66 p. c.) consists largely of l-pinene, but neither eudermol nor eucalyptol. A variety *minor* yields an oil which contains phellandrene besides l-pinene. Both species yield a ruby kino, consisting principally of tannic acid and water, and containing neither gum (like the "Ironbacks"), eudermin nor aromadendrin (like the "Boxes").

[Pharm. Journ., 62, p. 119; from Proc. of Linnean Soc., N. S. W., 1898, pt. 3.]

A somewhat more detailed account will be found in the Chemist and Druggist. [C. & D., 1899, I, p. 323.] *E. K.*

Phellandrene in Eucalyptus Oils.—R. F. Baker and H. G. Smith comment on the unreliability of the so-called nitrite test. Incidentally they call attention to the fact that the oil of the leaves of tallow-wood, *Eucalypus nicrocorys*, consists almost entirely of dextropinene. A report on the oils of fifty species may soon be expected. [C. & D., 54, p. 299.] *E. K.*

The Assay of Eucalyptus Oil.—D. B. Dott read a paper on the phosphoric acid test for cineol as directed by the B. P.

[Pharm. Journ. 62, p. 57.] *E. K.*

Adulteration of Neroli Oil.—Charabot & Pillet state that petitgrain oil and bergamot, lemon and orange oils are used as adulterants, but can readily be detected by marked differences in physical and chemical properties.

	Sp. gr.	α	Fract. 175°.	Esters.
Neroli.....	0.872—0.876	+1.42 to 4.06°	large (+)	10—20 p. c.
Petit Grain.....	0.891—0.894	laevogyrate	none	50—70 "
Bergamot.....				38+

[Pharm. Journ., 62, p. 163; from Chem. Ztg., 22, p. 310.] *E. K.*

More About Citral.—A discussion of the citral controversy.

[Chemist & Druggist, 54, p. 124.] *E. K.*

Japanese Peppermint.—How and when it is harvested and distilled. With map and three illustrations. [C. & D., 54, p. 144.] *E. K.*

What is "Eucalyptus Oil"?—An editorial on 1) the origin of the oil and 2) the chemists' duty in refereuce to the B. P.

[C. & D., 54, p. 149.] *E. K.*

Oil of Chione Glabra.—The wood of this large flowering tree indigenous to Grenada has a strong aromatic, somewhat faecal, odor. This is due to a volatile oil which Dunstan and Henry find to consist chiefly of o-hydroxy aceto phenone $C_6H_4COCH_3.OH$. The oil also contains a minute amount of what appears to be the crystalline methyl ether of this substance, $C_6H_4COCH_3.OCH_3$. [Chem. News, 78. p. 313.] *E. K.*

Botany and Pharmacognosy.

Schimmelia oleifera.—At a recent meeting of the Linnean Soc., E. M. Holmes, Curator of the Museums of the Br. Ph. Soc., exhibited specimens of this plant, a native of Venezuela, the wood of which yields West Indian oil of sandelwood. The plant, hitherto undescribed, belongs to a new genus of *Rutaceæ*, and he has named it after the Leipzig firm which, with considerable difficulty, procured flowering and fruiting specimens of the plant to enable its proper determination. [C. & D., 54, p. 375.] *E. K.*

Coca Leaves.*—Albert Schneider contributes an interesting paper on a morphological study of the commercial cocas, viz. Bolivian and Peruvian, and also considers a Brazilian coca (ipadu), which was donated by the Brazilian government to Northwestern University. The author observes in the ridge or crest above the midrib on the upper surface a distinguishing

* A contribution from Research Committee *C*., of the U. S. Pharmacopœia Revision Committee.

mark for these three leaves. In the Peruvian (Truxilo) coca the ridge is scarcely perceptible. In the Bolivian (Huanuco) leaves it is prominent and conical, whereas in the Brazilian coca, while the ridge is also prominent, the cone is obliquely truncate. To make out these distinctions, it is best to examine cross sections of the leaf under a medium magnifying power. The histological differences in the Peruvian and Bolivian coca leaves are mainly of degree; the papillæ on the lower epidermis of the Peruvian leaves are more prominent than in the Bolivian, and a second layer of palisade cells are frequently quite well developed. The papillæ in the Brazilian coca leaves are characteristic, being globose.

A comparative study of the powdered leaves of Bolivian and Peruvian coca reveals no distinctive characteristics. The bast and vascular elements are more numerous in the Bolivian variety. The presence of more prominent papillae in the Peruvian coca might serve to distinguish this leaf if the examination is carefully conducted. It is practically impossible, however, to recognize admixtures of either coca. In attempting the detection of an admixture, the following suggestions may prove useful: Powder ranging in fineness from No. 60 to No. 80 should be selected. Place a small quantity on a slide in a mixture of equal parts of alcohol, glycerin and water, cover with a cover-glass and heat over a flame to remove air bubbles. Search for fragments of the lower epidermis affording a lateral view. If there are a number of fragments showing considerable differences in the size of the papillæ, it is in all probability a mixture. By way of comparison it is absolutely necessary—as in all work of this kind—to examine pure powders of the two varieties of coca. The Brazilian coca may be recognized in a powdered condition, however, by the prominent glabose papillæ of the lower epidermal cells. [Western Drug., 20, p. 540.] *H. K.*

Caoutchouc Plants of the Fiji Islands.—In the Fiji Islands all trees bearing a milky juice are designated by the names *Drega* or *Droga kan.* These names are applied chiefly to the most important caoutchouc-bearing plant of the islands, *Tabernaemontana Thurstoni* Baker. This tree reaches a circumference of 2 or 3 feet at the base and yields an abundant sap. The caoutchouc, however, which lately reached England is hard and lacks commercial value.

Alstonia plumosa Labillard and a hairy form, *A. villosa* Szem., the *Aarua* or *Drega guuruguuru* of the natives, promises better. The method of obtaining this caoutchouc is peculiar, the islander collecting it in his mouth. The natives first remove the leaves from the twigs, which are then broken up into pieces from one-half to a foot in length, and are then put first one end then the other into the mouth until this is full of raw caoutchouc. These mouthfuls are worked together into balls. The reason for this method of operation lies in the fact that the sap does not flow freely from incisions.

The youngest twigs have the most sap, while the stem lacks sap. This coagulates extraordinarily rapidly, especially so when some coagulated sap is added to that in a semifluid condition.

Ficus obligua, Forst., *Baka* of the natives, yields caoutchouc which is used by the natives as bird lime. Incisions are made in the bark and the collected sap coagulated by heat. The product is elastic though not of the best quality.

A tree as yet unidentified, collected by the islanders, *Bau*, yields a rather inelastic product. [Pharm. Zeit. 43, p. 749; from Kew Bulletin, July, p. 164.] *R. H. T.*

American Saponaria Root.—In recent comments on Dr. Rusby's list of Medicinal Plants of New Jersey,* the writer explains the difference Rusby notes between the appearance of the American root of *Saponaria officinalis* and the imported article by the fact that only roots of *Gypsophila* find their way to America. In Germany, the root of the cultivated *Saponaria* is said to have only local significance. [Pharm. Zeit. 43, p. 749.] *R. H. T.*

Calendula Flowers in Saffron.—In connection with the almost constant occurrance of Calendula flowers in saffron in certain parts of the United States,† the fact that during the past year many thousand kilos of these flowers were shipped into this country from China, gains perhaps in significance. It is known that they were not imported for use in dyeing, but as a drug. [Pharm. Zeit. 43, p. 750.] *R. H. T.*

Cultivation of Drug Plants in Camerun.—Experiments are in progress in the Victoria Experimental Gardens of Camerun, German West Africa, to introduce into this colony the cultivation of many useful plants. The report of the Director, Dr. Preuss, indicates varying success.

Cinnamonum Zeylonicum, the Ceylon cinnamon, seems to prosper here; a good but somewhat uneven quality of bark is produced. Although the nutmeg, *Myristica fragrans* Houtt., may be regarded as introduced, its ultimate success is not yet certain. *Piper nigrum*, the black pepper, *P. Betle*, the betel pepper, and *P. angustifolium*, the matico, flourish, but *P. Cubeba*, the cubeb, and *P. officinarum* have met with no success.

Tea culture, unsuccessful at lower levels, bids fair to develop into an industry at greater elevations.

Of medicinal plants, the croton plant, *Croton Tiglium*, is especially flourishing. Ipecac culture, as so often in other places where attempted, is a failure.

[Notizbl. d. Königl. bot. Gart. u. Mus. z. Berlin, 2, p. 159.] *R. H. T.*

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* Pharm. Rev. 16, p. 344.
† Pharm. Rev. 16, pp. 258 and 347.

Fungus Diseases of the Tea Plant.—Massee describes at length the grey blight which bids fair to become dangerous in the tea plantations of Assam. The disease is due to a fungus belonging originally in Eastern Asia, *Pestalozzia Guepini* Dermaz. Thif fungus has been brought into Europe with imported plants and in America the parasite has gone over to the magnolia. Massee describes also two new species causing diseases: *Exobasedium vexans* Massee and *Stilbum nanum* Massee.

[Pharm. Zeit. 43, p. 749; from Kew Bull., June, p. 105.] *R. H. T.*

Chlorophyll Produced without Light.—A. Etaed and M. Bouilhac find that *Nostoc punctiforme*, cultivated in a suitable solution of glucose, affords a bright green growth, the color of which is due to chlorophyll. The fresh coloring matter gives precisely the same absorption bands as fresh chlorophyll grown under normal conditions.

[Am. Drug. & Pharm. Rec. 33, p. 171; from Comptes rendus 127, p. 119.] *R. H. T.*

Bixa Orellana.—The leaves have been used for some time against vomiting. Former tests to show the presence of alkaloids failed. Surie now shows that evidently one or more glucosides are present.

[Apt. Ztg. 14, p. 35; from Nederl. Tijdschr. voor Pharm., Nov. 1898. *E. K.*

Aspidium spinulosum.—Poulsson has continued his investigations of the ethereal extract of this fern and recently reported on five substances belonging to the filicin group:

1. Polystichin, $C_{22}H_{24}O_9$, formerly known as yellow polystichic acid.
2. Polystichalbin, $C_{22}H_{26}O_9$, formerly designated white polystichic acid.
3. Polystichinin, $C_{18}H_{28}O_8$, m. p. 110.5°.
4. Polystichocitrin, $C_{15}H_{22}O_9$, softens at 80 and melts at 150°.
5. Polystichoflavin, $C_{24}H_{30}O_{11}$, m. p. 158°.

Several of these yield crystalline condensation products with aniline and phenylhydrazine.

[Apt. Ztg. 14, p. 36; from Arch. f. exp. Pathol. u. Pharmakol., 1898, p. 246.] *E. K.*

Coloring Matter from Uva Ursi.—Perkin has isolated a yellow coloring matter from the leaves which crystallizes in needles and has the formula $C_{15}H_{10}O_7$, and yields phloroglucin and protocatechuic acid when melted with alkalies. Ellagic acid, gallotannic acid and ellagotannic acid were also identified.

[Pharm. Ztg. 44, p. 95; from Chem. News, 1898, p. 208.] *E. K.*

Oxydases of Aconite and Belladonna.—E. Lepinois finds that the expressed juices of aconite and belladonna contain oxydases which are destroyed by a brief exposure to a temperature of 100°. The belladonna ferment, precipitated by alcohol, was found to give 31.36 p. c. of ash; that

from aconite 33.57 p. c. It is noteworthy that the latter contains but a feeble trace of manganese, which has been regarded as an essential constituent of these oxydases. These researches have a practical pharmaceutical bearing, since the author finds that it is to the presence of these ferments that the changes of color observed in the alcoholatures of the Codex are due. Those preparations are made by macerating the crushed fresh herb in alcohol at normal temperatures. They speedily loose color, but if in the course of preparation they are heated to the boiling point for from fifteen to thirteen minutes, they will keep perfectly, maintaining their bright green color for several months.

[Pharm. Journ. 62, p. 96; from Journ. de Pharm. [6], 9, p. 49.] *E. K.*

Crystalline Capaloin.—This substance has been obtained in a crystalline form by Tschirch and Hiepe by a systematic use of various solvents. It crystallizes in almost colorless needles. Its reactions differ from those of barb- and nataloin and remsembles those of capaloin.

Practical Pharmacy.

Assay of Liquid Extract of Belladonna.—An improvement on the B. P. process is reported by E. Dowzard by which he obtains a slightly larger yield. [C. & D., 54, p. 401.] *E. K.*

A New Disinfectant is suggested by Kroening and Paul. 45 ccm. of concentrated sulphuric acid are diluted with 1600 ccm. of water, and 500 ccm. of a 4 p. c. potassium permanganate solution are added. Spores that are otherwise most resistant are destroyed by this solution.

[Apt. Ztg. 14, p. 33; from Wien. med. Bl., 1889, p. 46.] *E. K.*

Phosphorated Oil.—E. Kroos points out that only part of the phosphorous is present in the elemental condition and that some of it is combined possibly with the acid radicles; also that the combined phosphorous increases with age. A generally satisfactory method for the determination of the total phosphorous could not be devised.

[Apt. Ztg. 14, p. 27; from Arch. d. Pharm. 236, No. 8.] *E. K.*

Drug Adulteration in Great Brittain.—The following, abstracted from the report of the Local Government Board for 1897 and relating to the administration of the Sale of Food and Drugs Act, is of interest to pharmacists.

There were 1,964 samples of drugs examined, and 206, or 10.5 percent.. were condemned. Nearly one-half of the total number was taken in London, Birmingham, and the districts within the jurisdiction of the County Councils of the West Riding of Yorkshire and Glamorgan. In these places the percentage of adulterated samples was found to be 9.4, which is lower by 1.1

than for the rest of the country. There were 35 samples of rhubarb adulterated out of 198 taken; of nitre, 39 out of 156; of quinine, 10 out of 99; of prescribed medicines, 17 out of 109; of sulphur, 2 out of 90. 345 samples of glycerin were analysed and 23 were condemned. 20 samples of lime water were analysed, and 13 were reported against; of these, 16 were taken in the City of Carlisle, and 10 condemned, two of them being deficient in lime to the extent of 92 per cent., respecting which the analyst remarks:— "The deficiency of lime, especially in two cases where the samples consisted of (practically) impure water only, was most serious, as it would jeopardise and might sacrifice the lives of children. Lime water is chiefly used to mix with milk for infants' feeding. Infants fed on cows' milk are very subject to vomiting and severe diarrhœa, caused by their inability to digest the caseine of the milk. In these cases the addition of lime water to the milk," is used, he explains, "to stop the vomiting and diarrhœa through its action on the caseine, rendering it soluble in the gastric juice. If this so-called lime water was relied on, the caseine would not be dissolved, the vomiting and diarrhœa would continue, and the child would rapidly succumb to fatal exhaustion. Of course the 'adulteration' is not wilful, but is due to carelessness—criminal carelessness."

Legal proceedings were taken in respect of only 87 of the 296 cases reported against, and 53 fines were inflicted, including four of 5*l.* each.

[Chemist and Druggist, 53, 601.] *W. A. P.*

Ergot of the proper quality is unfortunatly becoming more difficult to obtain each year. There is undoubtedly much of this article to be found in the market each season but its therapeutic efficiency is quite deficient. Poor seasons for its proper development are becoming more frequent as the demand increases to supply the growing wants, and where one or more poor seasons succeed each other the lack of a good quality becomes more embarrassing. Therefore it is not surprising that increased efforts are being made towards its preservation from one season to another. In France the preservation has been attempted by L. Aymonier, by immersing the fresh ergot in an etereal tincture of tolu, permitting it to dry and then perserving it in well sealed packages. The ergot thus thoroughly varnished with the coating of tolu has been preserved, according to records, for eight months without any visible change, and the statement is made that it would no doubt keep for an indefinate period. The English claim that this practice has been known by them for many years. They claim that the ergot so treated has a slight taste, which is quite natural, but it otherwise leaves the ergot unaffected. It is recommended, however, that the fluid preparation should be made of the fresh ergot at once and thus insure its keeping. Mr. John Moss of Galen Works, London, S. E., England, writes in a note (Chem. and Drug. Vol. 52, page 220) stating:

"Before the British Pharmaceutical Conference at Aberdeen, in 1885, I read a note describing an experiment which was carried out by originally at the suggestion of that veteran pharmacist, T. B. Groves. Ergot was crushed to a coarse powder, then put into a hydraulic press, and as much as possible of the oil squeezed out. The cake that was left resembled a piece of linseed cake—as hard and dry as a board is. It was wrapped in paper in the ordinary way, and left on a shelf for seven years. No weevil got his tooth into it, and some liquid extract prepared therefrom was employed in several cases and found to be as effective as the same preparation from fresh sound ergot. The plan described was not so fortunate as to secure the approval and support of Professor Kobert, whose authority on ergot is so justly worthy of respect. Why, I don't know; but I hold, nevertheless, that an affirmate experiment of this nature is more valuable than any number of failures, as showing that ergot can be preserved under very ordinary conditions if pressed into a cake and the oil squeezed out."

On this side of the Atlantic a still better practice is carried out and that is to sprinkle chloroform liberally through a large package of either the whole ergot or the ground ergot and properly seal the package. By such a device it is preserved practically indefinitely for there is little chance for the peculiar insect to live in that atmosphere.

[Ephemeris, 5, p. 2163.] *E. K.*

Belladonna Standards.—S. W. Williams remarks that in the new British Pharmacopœia seven out of nine belladonna preparations are standardized to contain a definite proportion of alkaloid. All six are preparations of the root, while the other two, the juice and the green extract, are the only preparations of belladonna leaf retained. In view of the approaching revision of the U. S. P., the author believes a review of data bearing upon belladonna standards to be in order at this time.

Belladonna Root.—Although age and season of gathering doubtless influences the alkaloidal strength of drug, the U. S. P. makes no specifications in this respect. While the B. P. directs it to be collected in autumn, Kremel[1] found the dried spring root to yield 0.880 p. c. of alkaloid and the fall only 0.225 p. c., hence further experiments regarding proper time of gathering are desirable. E. R. Squibb[2] states that good unpealed German belladonna root should not yield less than 0.46 p. c. of atropine and may easily be had of such quality as to yield 0.50 p. c., and at the same time recommends that the leaves be dropped from the Pharmacopœia. W. Simonson[3] reports assays of samples ranging from 0.22 to 0.75, with 0.59 p. c. of alkaloids as a fair average. J. Barclay[4] finds the average of twenty-three specimens

[1] Pharm. Ztg. 96, p. 686. Digest of Criticisms of the U. S. P., part 2, p. 30.
[2] Ephemeris 2, p. 853.
[3] Proc. A. Ph. A. 37, p. 120.
[4] Pharm. J. (3), 23, p. 740.

to be 0.48 p. c. of alkaloid. A. B. Lyons finds a higher average.[5] (The results of Simonson were obtained by weighing the alkaloid as extracted by solvents, those of Lyons by means of Mayer's solution and both therefore somewhat in excess of values obtained by methods in vogue now. W. A. P.) The author regards 0.5 p. c. alkaloid as the proper basis upon which to establish ssandards for preparations made from belladonna root.

Belladonna Leaves.—Based upon the examination of belladonna leaves by W. A. Puckner[6], 0.40 p. c. alkaloid is concluded to be the proper figure upon which to base preparations for belladonna leaves. The directions of the B. P. to collect the leaves while the plant is in flower is also recommended for adoption.

Alcoholic Extract of Belladonna Leaves, U. S.—Assuming a yield of 20 to 23 percent of extract from the leaves by the official process, the 0.4 p. c. leaf should give an extract assaying from 1.7 to 2 percent alkaloid. It is also suggested that if the U. S. required the leaf to meet a certain alkaloidal standard, dealers in crude drugs could readily supply the powdered drug of fairly definite strength, as in the large way it would be easy to mix weak and strong drug to meet the requirement, as recommended by Puckner.

Extract of Belladonna Root.—While the B. P. has reduced this preparation to 1 percent of alkaloid, the reports of Cowie[7] and of Dunstan and Ransom[8] indicate that 3 percent would be a fair average, certainly not less than 2.5 percent.

Belladonna Plaster of the new B. P. is standardized to contain 0.5 p. c. of alkaloid and the liquid extract of the root is used in its preparation. The author has previously advocated the adoption of this standard[9] and again offers ample reason why the next revision of the U. S. P. should use belladonna root to make the plaster and that this should contain 0.50 p. c. of alkaloid.

Fluid Extract of Belladonna Root, representing the drug part for part, should of course be standardized to contain 0.50 percent alkaloid.

Belladonna Liniment, being a camphorated fluid extract of the root, would naturally be 0.5 percent. In this instance 0.375 percent would, however, better agree with the B. P.

Belladonna Ointment, representing 10 percent of extract of belladonna leaf, should assay 0.2 percent.

Tincture of Belladonna Leaves, a 15 percent tincture, may properly be standardized at 0.06 percent alkaloid, or, perhaps, better, 0.05 percent, thus agreeing with the British standard. [Drug. Circ. 43, p. 5.] *W. A. P.*

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[5] Pr c. A. Ph. A. 38, p. 156.
[6] Pharm. Rev. 16, p. 324.
[7] Pharm. J. (3), 21, p. 631.
[8] Pharm. J., March 1895.
[9] Proc. A. Ph. A. 38, p. 155.

"**Acid Acetic** as a menstruum for the exhaustion of crude drugs is now an accomplished fact. Since this time last year much work has been completed with it by more than one set of observers. A systematic series of exhaustions has been undertaken on a scale much larger than is possible in the experimental laboratory, and all of the officinal drugs of different coarseness of powder are now being treated in turn with varying strengths of the acid until the proper conditions are found which will complete the exhaustion. The strength of acid employed has varied from that used in the old pharmacopœial products "Aceta" up to as high as 60 percent to accomplish the results, the aim constantly being to employ as weak an acid as possible for obvious reasons. The resulting fluid extracts are found to be of the same quality and strength as the officinal products and should be equally effective. The veterinarians have naturally been much interested in these products and have studied the subject in the line of comparative therapeutics. From their encouraging reports further progress in the use of these products is now quite established. The reduction in cost is more of an item with the veterinarian than with the physician, but with the latter also the reduction will be found to be a marked feature. It will be found that the efficiency of the drugs so treated has been largely increased by the elimination of alcohol. Although acetic acid generally exhausts drugs more completely and thus naturally extracts a much larger proportion of inert matter, it will be noted that such a finished product gives much less precipitate on dilution with water than the alcoholic preparation. This fact will be appreciated by the physician in compounding his prescriptions, for although in some cases a slight precipitate will take place when diluted with water, yet in most cases it will be found to be so slight that it can be ignored, especially as it throws down little if any alkaloidal principles. In general then these acetic acid fluid extracts may be diluted without precipitation, of course, with acetic acid, but again even with alcohol to the tincture strength if necessary without giving more than a slight turbid solution, if any, and may be diluted with water without giving nearly as muddy or unsightly a solution as the alcoholic preparation of the same drug. If the action of acetic acid be objectionable in any case, such an excess may be neutralized as far as needed with either soda or potash, and the remaining slight acidity will be found to be rather beneficial than otherwise, not only to the alimentary tract but in some cases to the urinary bladder. An instance may be mentioned how a fluid extract of buchu made with acetic acid can be enhanced in its effects by neutralizing at least some portion of the acid present with potash, thus giving in the product potassium acetate and thereby procuring a combination largely used by genito-urinary practitioners.

Comparative trials of these new acetic acid products are therefore urged upon practitioners in general, to verify the favorable reports which have already been made from an increasing number of observers."

[Ephemeris, 5, p. 2105.] *E. K.*

New Remedies.

Gomenol.—This trade name has been given to the volatile oil *Melaleuca viridiflora*, a myristicaceous plant growing in New Caledonia in the neighborhood of Gomen. The oil is said to contain 66 p. c. cineol, a terpene, terpineol and traces of esters of acetic, butyric and valerianic acids, and is "free from poisonous aldehydes." As a remedy for tuberculosis of the lungs and other diseases of the respiratory organs, capsules containing 0.25 g. are administered four times daily. It is stated to have been efficaceous likewise in rheumatism and neuralgia, and as a 2 p. c. injection in inflamation of the bladder.

[Pharm. Centrh., 39, p. 652; from Bull. gén. de Thérapeutique.] *E. K.*

Heryine is the trade name of the Farbenfabriken zu Elberfeld for the diacetic ester of morphine. Floret recommends it as a relief for cough due to various causes. The report is a preliminary one in every way. It was administered in doses of 0.005—0.01 to 0.02, 3 to 4 times daily, either in the form of powder mixed with sugar, or in aqueous solution, the solution being accomplished with a few drops of acetic acid.

[Therap. Monatsh., 12, p. 512.] *E. K.*

Antipyrine Tannate is prepared by the apothecary A. Sztánkay in Schemnitz in the following manner: 3.2 g. antipyrine and 1.88 g. tannin are each dissolved separately in 10 ccm. of distilled water. Upon mixing the two solutions, antipyrine tannate is precipitated as a caseous precipitate, which is separated, dried at a low temperature and powdered. It constitutes a yellow powder which, as is evident, is insoluble in water and is tasteless. Acids decompose it into its constituents. Its formula is supposed to be $C_{11}H_{12}N_2O_1C_{14}H_{10}O_9$, and it contains 37 p. c. antipyrine and 67 p. c. tannic acid.

[Pharm. Rundsch. (Prag), 24, p. 556; also Pharm. Ztg. 43, p. 667.] *E. K.*

Eudermol, not endermol as it has been given repeatedly but erroneously, is the trade name of L. C. Marquardt of Beuel for nicotine salicylate, $C_{10}H_{14}O_2 . C_7H_6O_3$ This salt crystallizes in colorless, transparent crystals which melt at 118°, are readily soluble in water and soluble in most of the organic solvents. It has a slight empyreumatic odor.

Wolters recommends it (Therap. Monatsch. 1898, No. 8,) as specific against scabies. It is applied in the form of an lanolin or vaselin ointment containing 0.1 p. c. of eudermol. [Pharm. Ztg. 43, p. 667.] *E. K.*

Heroin.—A diacetic ester of morphin $\left(C_{17}H_{17}\begin{matrix}O(OC.CH_3)\\ O)OC.CH_3)\end{matrix}NO\right)$ prepared by the Elberfelder Farbenfabriken. It forms an inodorous white crystalline powder of slight bitter taste and alkaline reaction, melts at 173° C., is almost insoluble in water, but dissolves in diluted acids and excess of alkalies.

Heroin is recommended in doses of 0.005 to 0.02 gm., three or four times daily in treatment of bronchial and asthmatic affections.

This compound (heroin) is based upon a preparation of similar character introduced by E. Merck in 1896 under the title of peronin, which is the hydrochlorid of benzyl morphin. This peronin possessed a hypnotic action between that of morphin and codein, acting in doses of 0.05 to 0.08 gm. as a sedative and hypnotic; its only disadvantage, like that of heroin, being its comparative insolubility in water.

[Ph. Centrh. 39, pp. 687 & 908; 40, p. 2; also Therap. Monatsh. 13, p. 512.] *V. C.*

Dionin, the latest addition to this class of morphine derivatives is the hydrochloride of the a-mono-ethyl ether of morphine of the formula $\begin{matrix} C_2H_5O \\ OH \end{matrix}\!\!\diagdown\!\!\diagup C_{17}H_{17}NO.HCl + H_2O$. This forms an inodorous fine white crystalline powder which melts at 123 to 125° C. 100 parts of water dissolve 14 parts of dionin, 100 parts of alcohol 73 parts, while its solubility in simple syrup is about 1:20.

This compound, which is so closely related physiologically and chemically to codeine $\left(C_{17}H_{17}\begin{pmatrix} OH \\ OCH_3 \end{pmatrix}NO\right)$ gives the same color reactions with sulphuric acid and ferric chlorid, also with Froehde's reagent.

As experience has shown, the introduction of ethyl groups in place of methyl results in an increase in physiological activity, hence dionin possesses a narcotic action similar to that of morphin without, however, attaining the intensity of the latter.

As examples of the effect of such substitutions we may cite trionol (a *tri*-ethyl derivative) and sulfonal (a *di*-ethyl derivative), also methyl-urethane and ethyl-urethane.

Dionin is indicated in all cases where morphin is indicated, in the same doses as codein. It is claimed to be non-accumulative in action and that patients are not liable to become accustomed to its use as in case of morphine.

[Phar. Centralhalle, 40, p. 9.] *V. C.*

Carbon-monoxid-amyl-nitrite.—To prevent the usual distressing symptoms which follow the use of pure amyl nitrite, Winkler has recommended the use of this carbonized preparation, which is made by partly saturating amyl nitrite with carbon monoxid. [Phar. Centralh., 40, p. 5.] *V. C.*

Precipitated Metallic Tin has been recommended as an excellent remedy for removing tape worms, being free from any disturbing side symptoms. The powdered tin is precipitated by galvanic action.

[Phar. Centralh., 40, p. 5.] *V. C.*

Sanguinoform.—According to Aufrecht, this consists of a mixture of iron saccharate, milk sugar, starch, a small quantity of a nitrogenous substance and peppermint oil. [Ph. Ztg., 39, p. 888.] *V. C.*

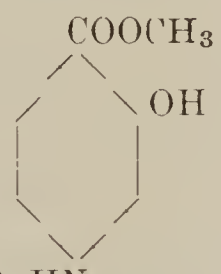
Martol.—A semifluid extract prepared by J. E. Stroschein of Berlin from the shell of the cacao, which contains 0.683 percent of ferric oxide and 10.45 percent of inorganic salts. Martol contains in addition to iron tannate its essential medicinal agent, theobromin, carbohydrates and phosphoric acid. [Ph. Ztg., 39, p. 888.] *V. C.*

Thymobromal.—A syrup intended for whooping cough, consisting of a solution of the extracts of chestnut leaves and thyme with bromal hydrate in simple syrup. [Pharm. Centralh., 40, p. 871.] *V. C.*

Substitutes for Peppermint.—Messrs. Kestner & Co. have prepared two unsaturated cyclic ketones from wood-tar which possess a strong peppermint-like odor. They boil at 192° C. and 193° C., respectively. [Pharm. Centralh., 39, p. 872.] *V. C.*

Deodorized Ichthyol.—Helmers has found that by careful treatment with hydrogen dioxid the odorous principles of ichthyol undergo oxidation resulting in an almost inodorous product. The sulphurated hydrocarbons present being probably converted into sulphonic acid derivatives. For this purpose 2.5 kg. of 3 percent hydrogen dioxid are added to a mixture of 10 kg. of ichthyol-ammonium and 7.5 kg. of water: this is allowed to stand for 24 to 48, hours whereby the peculiar ichthyol odor disappears and an aromatic odor becomes noticeable. This mixture is evaporated to an extractive consistence on a water bath, then taken up with water, neutralized with ammonia and finally evaporated to its original weight, namely 10 kg. [Schweiz. Wchschr. f. Chem. u. Pharm., 36, p. 522.] *V. C.*

Nirvanin.—A di-ethyl-glycocyl-para-amido-ortho-oxybenzoic-acid-methyl-ester-hydrochlorid possessing the following structural formula:



$HCl.(C_2H_5)_2:N.CH_2.CO.HN$

has been introduced by the Hoechster Farbenwerken as a subcutaneous local anaesthetic. It appears in white prisms soluble in water giving with ferric chlorid a violet color and melts at 185° C. A 1 percent solution arrests bacterial development, 0.5 gm. injected subcutaneously produced anaesthesia without irritation. Nirvanin irritates the eye, it possesses an advantage over cocain in being non-toxic. [Phar. Centralh., 39, p. 901.] *V. C.*

Russol.—A rheumatic liniment prepared in Basel which is stated to consist of oil of wintergreen, chloroform, colchicum, capsicin and spirit of mustard. [Phar. Centralh., 39, p. 872.] *V. C.*

Formoforin.—A dusting powder for the feet consisting of thymol 0.1 p., formaldehyde 0.13 p., zinc oxid 34.5 p., and starch 65.2 p.
[Pharm. Centrh., 39, p. 873; from L'Union pharm.] *V. C.*

Guaiacophosphal.—A commercial title for guaiacol phosphite (guaiacol-phosphorous ester), which contains 92.2 p. c. guaiacol.
[Phar. Centralh., 39, p. 885.] *V. C.*

Kelen-Methyl.—A mixture of ethyl and methyl chlorids.
[Phar. Centralh., 39, p. 885.] *V. C.*

Vellolin.—A special name for *Adeps Lanæ.*
[Phar. Centralh., 39, p. 885.] *V. C.*

Dormiol.—A clear liquid smelling after chloroform and camphor, which possesses hypnotic properties. [Phar. Centralh., 39, p. 911.] *V. C.*

Physiology and Therapeutics.

Amylo-Fermentation.—Delbrueck states that the most important observation made since Buchner's discovery of zymase is the saccharification of starch by *Amylomyces Rouxii* rather than with the enzyme of malt. Practical tests have already been made in France yielding several percent more of alcohol than the method still generally in use.
[Apt. Ztg. 14, p. 113; from Chem. Ztg., 1899, p. 175.] *E. K.*

Poisoning by Water Hemlock.—Cases of poisoning of children by water hemlock, *Cicuta maculata*, which is frequently mistaken by them for wild parsnip, unfortunately are of annual occurrence. E. F. Ladd reports a case where a bull was evidently poisoned by the same plant, thus indicating even more strongly its poisonous nature.
[Bull. No. 35, N. D. Agr. Expt. St.] *E. K.*

A Study of the Toxicity of the Different Alcohols.—Whether the acute toxic effects of large doses of alcoholic beverages are to be ascribed in the main to the "fusel oil" contained therein is still a matter of doubt and Georg Baer offers some experiments along this line. Experiments upon rabbits were made with the various alcohols and also with ethyl alcohol to which the other alcohols had been added, and in general showed that the higher the boiling point the more poisonous the alcohol. The addition of

1 percent of higher alcohols to ethyl alcohol caused but a slight increase in toxicity, while 4 percent caused a marked increase. The addition of 2 p. c. of furfurol produced a greater effect than an equal amount of amyl alcohol, yet furfurol is not as poisonous as commonly supposed.

The work shows that the toxic effects caused by consumption of large quantities of alcoholic liquids are not to be ascribed to the fusel oil alone, but also largely to the ethyl alcohol itself.

[Arch. Anat. Phys., Physiol. Abt., 1898, p. 283.] *W. A. P.*

New Tuberculin Preparations.—G. Ruppel has accomplished some work in the direction of the isolation of chemical constituents of the products of the tubercle bacillus.

Tub. F. Alcohol 66 p. c. is a preparation obtained by filtration of the cultures, evaporation of the filtrate under diminished pressure to ½₀ of its volume, and fractional precipitation with alcohol etc.

Tub. F. dialyst. is obtained by dialysis. Both preparations consist of about 60 p. c. deutero-albumose.

From the comminuted bacteria he isolated tuberculosamine, a substance containing 4 p. c. phosphorus; and tuberculinic acid.

[Ph. Ztg. 44, p. 7; from Zeitsch. f. physiol. Chem. 26, Nos. 3 & 4.] *E. K.*

Ricinus Poison.—A. Cushny furnishes a very interesting contribution to the pharmacology of the poisonous principle of the seed of *Ricinus communis.* ricin was extracted from the seed cake with common salt solution and purified by repeated precipitation with alcohol. After a most elaborate series of experiments he found it impossible to obtain ricin that would not give the biuret reaction for proteid. He concludes therefore that ricin is either an albumin itself or is so intimately united with albumin that it cannot be separated by ordinary methods. He verifies the oft repeated statement that ricin is the most poisonous substance known. The fatal dose for rabbits is 0.04 mg. per kg. body weight, while of cobra poison it is 0.079 mg. and of aconitine it is 0.1—0.2 mg.

The latent period between administration of ricin and death is a very long one, varying from four to six or more days. From his researches he concludes that the quantity of ricin is not augmented within or outside of the body and that a ferment action is out of the question.

Ricin belongs to the globulins and is in all probability an individual substance. The author has separated a second proteid from the endosperm of the castor oil seed, which is inert and belongs to the albumoses.

[Arch. f. Exper. Path. u. Pharmak., Bd. 41, p. 439.] *J. O. S.*

Diagnosis of the Morphine Habit.—Lett does not find Bartley's method of testing urine of patients to demonstrate the morphine habit as reliable. He has known the test to give positive results when there was every reason

to believe that the patient had not taken any morphine. Again, the test sometimes fails, as in the case of one patient who was taking nearly 3 grains daily.

The following method, by means of which Lett has succeeded in obtaining morphine sulphate from the urine of patients taking very small doses of the drug where the Bartley test has failed, is recommended: Collect about 20 ounces (less will do) of the suspected urine. If it has not an acid reaction, acidulate with dilute hydrochloric acid until it reddens blue litmus. Concentrate to about three ounces and let stand in a cool place for twelve hours, and then filter. To the filtrate add sufficient carbonate of sodium to render it alkaline, and let it stand for twelve hours, and then filter and collect the precipitate. Wash this precipitate with distilled water made slightly alkaline by carbonate of sodium and dry it. Digest the dried precipitate with pure alcohol at a gentle heat and filter, evaporating the filtrate to dryness, and dissolving the residue with dilute sulphuric acid. Test for morphine by the iodic acid or other well-known tests for morphine salts.

[Canada Lancet, from Med. Standard, 21, p. 169.] *W. A. P.*

"**Bananina** has not been heard of under this name during the past year, but the use of bananas has met with some attention. Wm. C. Ussery of St. Louis, Mo., has called attention to the fact that they are an excellent food for typhoid fever patients, for the reason that there is such a small part of excrementitious matter in their composition that they do not irritate the ulcerative condition of the mucous membrane of the intestines. Almost the entire amount of the fruit is eaten is at once absorbed as nutritive material.

As is well-known to the medical profession, Robert Koch of Berlin, Germany, has been pushing his investigations into the cause of the East African plague, and in his report last July to the German Society for Public Hygiene, has made some very odd statements about several points, one of which was that the banana and banana plantations where the breeding grounds and the means by which this plague is spread. This is evidently very odd reasoning, for it is well-known that the plague exists in countries where the banana is unknown and also the plague is unkown in many sections of the world where the banana enters so largely into the daily food of the inhabitants. Such a statement as this is in keeping with another of his statements, that the plague will not survive the advance of civilization. He apparently does not consider what this word civilization includes now-a-days, for unless counteracting influences were brought to bear, one element alone of the progress of civilization—that of the introduction of railway transportation—would tend to spread the disease and would rapidly disseminate it throughout soil ready to receive it."

[Ephemeris, 5, p. 2141.] *E. K.*

Anæsthesia, although always a very prominent subject in the minds of all medical men and particularly the surgeon, has been probably somewhat more prominent during the past year owing to the fact that various forms of anæsthetics have been brought forward. Much more attention also has been given to the detail of administration and therefore much good may be expected from such an agitation. The reckless use of anæsthetics in some quarters has been the subject of much comment and aside from the expense of such recklessness other conditions are quite prominent. Interesting "Remarks on 6657 Administrations of Anæsthetics Conducted at the London Hospital During the Year 1897" has now been published (London Lancet Vol. I for 1898, page 483).

L. Fuster who read a communication "On General Anæsthesia" before the Société des Sciences médicales in which he used two parts of chloroform to one of ether, has apparantly verified what others, at least on this side of the Atlantic, have repeatedly found, and that is that the exciting stage is much reduced if not entirely eliminated by this mixture and the patient comes out in quite a normal condition. Vomiting is found to be much less frequent (Nouveau Montpellier médical Vol. VII, page 708).

The Schleich so-called compound (now at last acknowledged to be a mixture) has had quite a varied history in this country, especially in New York City, where its advantages have been strongely urged. The petroleum ether element, however, is gradually being abandoned and those observers who claim the great advantage of combination are looking for another product which will fill the place of the omission and accomplish the objects Schleich was aiming at. Too little attention and consideration are given to the question of careful administration with the already well-known anæsthetics. It is justly claimed by many that if as much consideration be given to the use of minimum quantities of chloroform and ether properly applied, as has been insisted upon with the Schleich mixture, little complaint could rightly be made with the older anæsthetics. The enthusiasts of Schleich's mixture are bragging over the extended series of administrations without disagreeable or unfortunate results, and appear to ignore the overwhelmingly greater list of favorable results when the older anæsthetics were administered with equal care.

D. H. Galloway of 200 Oakwood Boulevard, Chicago, Ills., in an article written by him entitled "The administration of Anæsthetics" (Journ. Amer. Med. Asso., Vol. XXX, page 1141) has called attention to his plan of counteracting the decomposed products of chloroform resulting from contact with exposed gas-light in the operating room, and states that his practice has been to saturate a towel with ammonia water and hang it up, or to scatter a little ammonia water about the room. This no doubt will accomplish the results as far as it goes, but it must be remembered that i

sufficient ammonia was thus distributed in some operating rooms known to the writer the quantity necessary would be quite as irritating to all present including the patient as the chlorine compounds, although probably not as dangerous.

[Ephemeris, 5, p. 2117.] *E. K.*

Toxins (meaning all the morbific substances produced by living beings) are still receiving attention from critical observers, but few direct comments have been made upon them. One detailed study, however, is worth noting here, and that is a paper by Alfred Salter of Sudbury, Middlesex County, England, on "Elimination of Bacterial Toxins by Means of the Skin, with Especial Reference to the Presence of Tuberculin in the Sweat of Phthisical Patients" in which he draws the following conclusions: "The above experimental evidence seems to me to have a practical bearing upon therapeutics inasmuch as it furnishes a rational basis for the old empirical method of treatment—viz., that of 'sweating a fever.' The artificial encouragement of the sweating no doubt assists in the elimination of the toxin by way of the skin leaving less behind to poison the tissues. I hope in a further communication to detail the results of the experimental examination of the sweat of patients with acute rheumatism, which I hope will assist in throwing some light upon the nature of the rheumatic toxin." (London Lancet, Vol I for 1898, page 152).

This was followed by a criticism of the above deductions by David Walsh of the Western Skin Hospital, London, W., England, under the head of "A Note on the Elimination of Bacterial Toxins by the Skin" in which he states:

"In conclusion it may be as well to add that I do not for a single moment suggest any doubt as to the absolute originality of Salter's valuable research. So far from that I welcome his contribution as most telling confirmatory evidence in favor of my own views. At the same time I have ventured to make the above comments, as it is desirable for all who undertake a work of this importance to have at least a general acquaintance with the drift of previous writings upon the subject." (London Lancet, Vol. I for 1898, page 362).

[Ephemeris, 5, p. 2279.] *E. K.*

Sublimate Paper.— Apothecary P. Stern of Breslau prepares, as substitute for mercuric chloride tablet, a filter paper saturated with the same chemical. A similar paper is said to have been used in France for some time. Not only is there less danger of mistake, but on account of the much larger surface exposed the solution is effected more rapidly. A paper can also be more conveniently and accurately divided than a tablet.

[Apt. Ztg., 14, p. 127.] *E. K.*

Literary.

Books and Pamphlets Received.

Field Columbian Museum—Chicago. Annual Report of the Director to the Board of Trustees for the year 1897—98. Report Series, Vol. 1, No. 4, pp. 263—343.

Author—London. An address to the students of the Metropolitan College of Pharmacy delivered November 26, 1898 by Dr. Frederick B. Power, Director of the Wellcome Chemical Research Laboratories. Pamphlet, pp. 10.

Author—New York City. The chemistry of cod-liver oil by Eustace H. Gane. A paper read before the New York College of Pharmacy, on Jan. 17, 1899. Reprinted from the Am. Dr. & Pharm. Rec. Pamphlet, pp. 6.

École Supérieure de Pharmacie—Paris. Sur la préparation et les propriétés des arsénieures alcalino-terreux. Thèse pour l'obtention du diplôme de pharmacien de 1re classe présenté et soutenue le 18 Février 1899 par Paul Lebeau. 1899. Pamphlet, pp. 32.

——Sur quelques carbonates doubles du protoxyde de chrome. Oxyde salin de chrome. Thèse pour l'obtention du diplôme de pharmacien de 2e classe, présenté et soutenue le 24 Février 1899 par M. Baugé. Pamphlet, pp. 27.

Author—Madison, Wis. Centrifugal milk analysis. By F. W. Woll. Reprinted from Journ. of Appl. Microscopy. Leaflet, pp. 2.

N. D. Agr. Coll. Expt. St.—Fargo. Bulletin No. 35. Some chemical problems investigated. Pamphlet, pp. 307—332.

Reviews.

Physical Chemistry for Beginners. By Ch. Van Deventer. Translated by Bertram B. Boltwood. 12mo., pp. x, 154. John Wiley and Sons. 1899. Cloth, $1.50.

This book is a translation from the German edition, the text of which has been closely followed. The translator has done his work in a very commendable way; he has shown ability in expressing the thought of the author in good idiomatic English. The work of the

publishers also has been well done, for the book is printed on paper of good quality; the type used is excellent and the cloth binding is neat and durable. Any criticisms then must be such as are applicable to the original itself.

The object of the book is to present the most important results of physical chemistry in such a manner as to make them accessible to those that have not made an exhaustive study of physics and mathematics. The requirements of students of medicine and pharmacy as well as of elementary chemistry have been considered in preparing the text. The book contains a brief introduction by van't Hoff, in which the latter states that he has found it valuable to use in his elementary classes in connection with his lectures. The book is indeed a syllabus to be used in connection with a course of lectures rather than a text-book of elementary physical chemistry.

The method of treatment of the subject is to lay down general propositions and then give exemplifications and qualifications in a number of appended paragraphs styled remarks, the latter taking up considerable space. Without going into details, it may be stated that a relatively large amount of attention is bestowed on thermochemistry, only thirteen pages are devoted to solutions, and the important subject of electrochemistry is entirely omitted. While the book does not decrease the demand for a good text-book of physical chemistry for English speaking students, the material that it contains, being put in clear simple language, will no doubt be found to be very helpful in connection with a good course of lectures.

Louis Kahlenberg.

DAS MIKROSCOP UND SEINE ANWENDUNG. Ein Leitfaden bei mikroskopischen Untersuchungen für Apotheker, Aerzte, Medicinalbeamte, Techniker, Gewerbstreibende etc. von Dr. Hermann Hager. Nach dessen Tode vollständig umgearbeitet und neu herausgegeben von Dr. Carl Mez, Professor an der Universität Breslau. Achte, stark vermehrte Auflage. Mit 326 in den Text gedruckten Figuren. Berlin. Verlag von Julius Springer. 1899.

The well known work of Hager dealing with the microscope and its use has served an important purpose since its first appearance. The fact that Hager was among the first to introduce this instrument into the service of the pharmacist has given an added prestige perhaps to this work among the members of this profession. After the

death of the veteran author, Dr. Mez undertook to work over the book, bringing it up to the times, the last edition bearing the date of 1886. Owing to the progress made along the different lines of microscopic investigation during the years intervening, it was found necessary to practically re-write the book.

About ninety pages are devoted to the description of the microscope, its accessories and the uses of these instruments. Since the work is intended for the use of beginners as well as of the more advanced, simple, clear directions and descriptions concisely put are the rule. These are supplemented by an abundance of illustrations. Occasional excursions into the realm of optics find place. The preparation and preservation of objects as well as the most important reagents and stains are treated.

The remainder of the work is occupied with the discussion of microscopic objects from the most varied sources and of the most hetereogeneous nature—all in some way or another related to the practical side of microscopy. Abundant hints regarding the most advantageous methods of pursue find place also. The teaching is decidedly by the use of concrete examples. The variety and nature of objects and substances thus touched upon may best be shown by the citation of the system of their classification. Inorganic objects are followed by a few forms of life from Haeckel's realm of the Protista. The vegetable kingdom is represented by sections and parts of the plants, varying from fungi to the highest forms. Various tissues of animal origin are illustrated.

After this preliminary presentation of objects drawn from various parts of nature, those of especial interest in a practical way are described. Foods, spices, tea, coffee, textile fibres and papers are discussed and the microscopic characters of the foodstuffs in a powdered condition as well as the common adulterants and organisms most destructive are described and frequently figured. Morphological characters of the bacteria and methods of staining, moulds, rusts, etc., as well as the commoner olgalforms are treated.

Objects of "practical significance" derived from the animal kingdom are handled in much the same manner. Blood corpuscles, objects occurring in urine normal and diseased, spermatozoids, milk, animal parasites infesting both animals and plants find consideration. The San José scale is treated at some length.

From the above it will be seen that the book, covering as it does a wide range of subjects, must be essentially for those whose demands are limited. It is in no direction exhaustive and is essentially a book for beginners or for those who are content with that which bears directly on a special line. It is a book adapted perhaps best for one who is obliged under circumstances not the most favorable to learn by himself how to use the miscroscope and to learn to recognize the things he will most frequently see. It touches on many things, but only introduces them.

To him who finds such a work the best thing he can afford, either because of time or expense, it will prove very valuable.

The mechanical get up of the work is very creditable.

Rodney H. True.

GRUNDRISS EINER GESCHICHTE DER NATURWISSENSCHAFTEN. Zugleich eine Einführung in das Studium der grundlegenden naturwissenschaftlichen Litteratur von Dr. Friedrich Dannemann. II. Band: Die Entwickelung der Naturwissenschaften. Ein Bd., pp. 435, mit 76 Abbildungen zum grössten Theil in Wiedergabe nach den Originalwerken und einer Spektraltafel. Verlag von Wilhelm Engelmann, Leipzig. 1898. M. 9.00; geb. M. 10.00.

Somewhat more than two years ago (see vol. 14, p. 284) we took great pleasure in recommending the first part of this work to our readers. Now that the second part has come to hand, we would say that no teacher of the sciences, whether in university or college, in academy or highschool, can afford to be without it. There is nothing which can contribute so much to place the study of the sciences on the proper basis as the study of their history. Even as disciplinary studies of the mind—to say nothing of a cultural aspect—the sciences will fall short considerably if their history is neglected. To a well balanced scientific mind the history of a science is almost as essential as the history of a literature or of art. Yet most of our science teachers of to-day know very little about the development of the science they are teaching.

Even those who have taken an interest in the history of their own science have, no doubt, felt the want of comparison of the development of the different sciences during corresponding periods. We may read a treatise on the history of physics, or botany, etc.,

yet without careful study we naturally fail to grasp the proper proportion of things. To have done this for us, to have presented in concise language the development of mathematics, mechanics, physics, astronomy botany and zoology during each period, is the merit of the author. It is interesting as well as introductive to see how the simpler sciences, mathematics and astronomy, mechanics and physics, had each their "Glanzperiode" long before the others had laid aside their empiric garb; how new discoveries in the one acted fructifying on the others. It is the same in the broad field of science in general as in the more narrow field of each individual science, notably e. g. in chemistry. The discoveries in physics are as a rule first applied to inorganic chemistry, then to organic chemistry. Physical chemistry of necessity leads physiological chemistry and the latter makes chemical discoveries available to the biologist.

The publishers could not have been more fortunate in supplementing their reprints of the exact sciences, commonly known as Ostwald's "Klassiker," than by a work of this kind. We have no doubt that this second volume will be received with even greater favor than the first. We hope that every American science teacher who has a reading knowledge of German will study this book. He cannot affort to be without it. *E. K.*

SCHLICKUM'S AUSBILDUNG DES APOTHEKERLEHRLINGS UND SEINE VORBEREITUNG ZUM GEHILFENEXAMEN. Nebst einem tabellarischen Repetitorium der Chemie und Pharmacognosie. Neunte, mit Rücksicht auf die neuesten Anforderungen gänzlich umgearbeitete und vermehrte Auflage. Herausgegeben von Dr. C. Gaenge, Dr. C. Jehn und R. Schlickum. Zweite Hälfte.* Leipzig. Ernst Guenther's Verlag. 1899.

The second part of Schlickum's well-known "Ausbildung" is devoted mainly to those divisions of the subject of pharmacy which deal with botany, pharmacognosy and the preparation of remedies. A chapter is devoted to the legal requirements binding on pharmacists.

The section dealing with botany takes up in clear, concise style the main features of morphology and terminology, plant anatomy and physiology and concludes with a review of the main features of the vegetable systematics. As would be expected, the lower forms

* For Review of Part I, see vol. 16, p. 403.

receive a very brief treatment, the chief consideration being bestowed on the flowering plants.

Pharmacognosy is likewise very concisely treated. The drugs are arranged according to a morphological system of classification. With but 115 pages, in which to cover this entire subject, little more than an outline of our knowledge can be given.

A discussion of the equipment of the pharmacy and the preparation of remedies are discussed in about fifty pages. The treatment is of the same elementary outline style that characterizes the rest of the book.

To aid the student in his task of learning the great mass of details required of him, a tabular synopsis covering chemistry and pharmacognosy is appended. This compact array of facts is obviously more readily run over than if the discussion were widely scattered.

The book is illustrated with many figures, in the main of good quality. Those in the section dealing with botany are better as a rule than those illustrating pharmacognosy. In the latter section, the value of the figure is decidedly a matter of doubt. Figs. 481 and 482, dealing with cinnamon barks, are especially wooden. Fig. 171 should be inverted.

The book doubtless fills well the place it is designed to fill. This is evidenced by the fact that the present is the ninth edition.

Rodney H. True.

Schlickum's Apotheker-Kalender für das Deutsche Reich 1899. Siebenzehnter Jahrgang. Herausgegeben von Dr. Franz Luedtke, Korps-Stabsapotheker. Verlag von Strecker und Moser, Stuttgart. 1899.

Part one contains a biography and portrait of Dr. Christian Brunnengraeber who for many years played an important role in the German Apothecaries Society; a diary and variety of tables for ready reference at the desk, the prescription counter and in the laboratory. Part two is a miniature hand-book of professional matters. Though its contents pertain to either the German states individually or the Empire at large, much of it ought to be of value to the officers of our associations and members of the state boards. *E. K.*

SUPPLEMENT.

Scientific Organizations.

Notes.

It will be gratifying to pharmacists to learn that at least one of the prizes distributed by the French Academy last December went to a pharmacist. M. Charles of Bordeaux was awarded the Montjou prize of $600 for his pamphlet on the extraction of tartaric acid from wine.

The Philadelphia College of Pharmacy has received a valuable collection of foreign drugs from the Philadelphia Commercial Museums.

Dr. W. A. Schmidt, assistant to Prof. Ostwald, has been appointed successor of Prof. Kippenberger in Kairo, Egypt.

According to recent reports, the councils of the University of Bordeaux and of the University of Montpellier have decided to create a diploma of Doctor of Pharmacy, following in this respect the universities of Paris and Lyons.

Professor Schimper, co-author with Prof. Strassburger of the famous Bonn text-book, and for a number of years lecturer on pharmaceutical botany and pharmacognosy at the University of Bonn, is going to Basel. It is announced that Dr. Karsten of Kiel will be his successor.

The University of Koenigsberg is indebted to a New York physician, Dr. Fr. Lange, for a magnificent building known as the Palaestra Albertina, which serves the purposes of a gymnasium and students' club house. The "Pharmacia," like the other students' societies, is provided with a "Kneipe" as a place of meeting and home of the organization.

Professor Otto of the Polytechnicum at Braunschweig has retired on account of age and ill health. Prof. Beckurts, editor of the German Jahresbericht, is now in sole charge of the pharmaceutical-chemical laboratory. Prof. Bodlaender, formerly with Prof. Nernst at Goettingen, is to have charge of the newly created electrochemical department.

University of Michigan. — The News-Letter for March 9. contains an announcement of the Summer School to be held at Ann Arbor. Pharmacy students will be especially interested in the courses in chemistry. The beginning of an arboretum, or botanical tree garden, will be made at the University of Michigan this year under the direction of the pharmacy department. The plan is to have specimens of as many different kinds of trees growing on the University campus as will thrive in this latitude. Special attention, however, will be given to the securing of trees of medicinal or economic importance. A few trees will be set out each year. They are to be selected and planted by the members of the future graduating classes of the pharmacy department. The trees are to be named and their location designated on a plat of the campus to be kept in the general library, along with a record which will show when and by whom the trees were planted. The plan will be set on foot by the present senior class, which numbers between twenty-five and thirty.

A New Indian School of Pharmacy.—A Chemical and Pharmaceutical Laboratory, the first of its kind in India, was opened at Rajkote Kathiawar, Western India, on November 29, of last year. The building, constructed at a cost of Rs. 30,000, is the gift of Azam Wala Laxmon Meram, Chief of Thana Deoli. His fellow chiefs have adopted the Laboratory as one of their central institutions and have voted Rs. 7500 for the apparatus and an annual grant of Rs. 8628 for the maintenance of the institution. The staff of the laboratory, consisting of Mr. H. L. Lee, formerly lecture assistant in the School of the British Pharmaceutical Society, and two native assistants, and a clerk, have already done one term of very satisfactory work with twenty-one students.

The object of this laboratory is "to teach the native medical men or vaidyas the proper method of preparing drugs from Indian herbs, to investigate more carefully the properties of those in use, and to discover the virtues of others, which, though used locally by herbalists, are not yet known to Western science."

Of the twenty-one students, thirteen held scholarships provided by different States. The remaining eight were private students studying at their own expense.

In this connection the following paragraph from No. 1757 of The Nation ought to be of general interest.

"Lord Curzon's first public duty on his arrival in Bombay as Viceroy-elect was to receive a deputation of the provisional committee of the Imperial University, or Research Institute, which it is proposed to establish in India. Mr. Jamsetjee N. Tata offers a capital of thirty lacs of rupees (say one million dollars), yielding an annual income of some forty-odd thousand dollars, as a nucleus for the funds of the institution; and the committee appeal to Government to second their efforts. The annual charge on the several departements, when once fairly equipped, is estimated at about $500,000. The scheme divides the studies into three groups—scientific and technical, medical and sanitary, and educational and philosophical. Bacteriological research figures largely in the plan, and ought certainly to make a powerful appeal, not only to Government, but to the native princes as well, especially now, while the plague is still raging. No better argument could be given for the utility of the scheme than the marvellous story of the wonders achieved by medical science at Anzop, a little village of less than six hundred inhabitants, in the Turkestan highlands, some two hundred miles from Samarkand. Anzop lies in a hollow in the mountains at a level of more than fourteen thousand feet above the sea, and so walled in by other surrounding heights that better isolation from infectious disease could not well be conceived. The plague had nevertheless been introduced there by a "holy person" who had brought back from a long pilgrimage a lot of coverings of tombs of the saints in Afghanistan. These a widow in Anzop had cut into small pieces and made into amulets for "the faithful" to wear on their breasts. It was no great matter for them to remain "faithful unto death," for 381 of the villagers were promptly stricken with plague, and all but three were claimed by the Grim Releaser. Dr. Lieven inoculated with Dr. Haff-

kine's prophylactic every one of the survivors, about a hundred and twenty in all, and then the awful pest was stayed, the last death occurring four days after Dr. Lieven's arrival with his phials of vaccine from a Bombay laboratory. It reads like a miracle even to us; but to the people of this mountain hamlet in Central Asia it must have seemed more than that, and they will doubtless for decades to come worship the St. Petersburg doctor as a god."

In Memoriam and Biography.

Dr. K. A. F. W. Mueller, Professor of Botany at the University of Halle, died Feb. 9th at the age of eighty. He began life as apothecary, but since his twenty-fourth year devoted himself to botany.

The former professor of the pharmaceutical sciences at the University of Brussels, Norbert Gille, died recently at the age of eighty. He was formerly apothecary and for a number of years was vice-president of the Academy of Sciences.

Brown-Sequard. — At the annual meeting of the Paris Academy of Sciences held last December, M. Berthelot, the Perpetual Secretary, to whose lot it fell to deliver the annual address, spoke on the life and work of the originator of modern organotherapy or opotherapy. Brown-Sequard was the posthumous son of a Philadelphia sea-captain named Brown, who perished in a shipwreck, and a French woman, Mlle. Séquard. He was born in 1817 in the Isle of Mauritius, ceded to England three years previously. In 1837 he came to Paris where he took scientific and medical degrees. When he first sailed to America in 1852, he knew no English. He gave French lessons in New York to support himself, and finally obtained, through the influence of some American physicians who had studied in Paris, a chair of experimental physiology.

In 1853 he married Miss Fletcher, a niece of Daniel Webster. This in no wise ended his wandering life. In 1854 we find him in Mauritius, director of a cholera hospital; in 1855 at Richmond University (Va.) as professor of physiology. His abolitionist ideas rendered it necessary to return to Paris. In 1857 and 1858 he lectured in England with great success, and in 1861 was elected Fellow of the Royal Society of London. In 1863 he is at Harvard and thus he crosses and recrosses the Atlantic sixty times.

His first wife having died in 1867, he in 1872 married a Mrs. Carlyle of Cincinnati. He lost his second wife in 1874 and two years later married a Mrs. Doherty of New York. In 1878, when in New York, he heard of Claude Bernard's death, hurried to Paris to claim the vacant chair, and naturalized himself as a Frenchman, a necessary qualification for the post. He spent the rest of his life in France, where he died in 1894. This brief sketch is abstracted from a communication of a special correspondent of the Era.

Professional.

On the Sale of Medical Diplomas. Americans who have studied in Germany, have, no doubt, been informed freely by their German friends about the ease with which incompetent persons can obtain doctor diplomas in this country; in fact that igno-

ramuses have frequently bought such diplomas and that Philadelphia is the city where they can or could be had. It requires no extended information to know that such diploma mills have existed at different times in different sections of the United States. Neither are we surprised to learn that the average German has no high opinion of the American medical diploma. In fact he has no very high opinion of anything American, being exceedingly ignorant of almost everything pertaining to this country. It may have surprised some, however, that Philadelphia should be so universally regarded as the centre of such pernicious medical activity.

In the course of his general reading, the writer not long ago read "Doktor Peschke," a farce in one act by D. Kalisch, from which the following dialogue is taken:

Peschke. Gut. Sie — Sie könnten mir dann auch einen Gefallen erweisen.

Willmann. Mit Vergnügen.

Peschke. Sie sind ein studierter Mann, Sie könnten mich zu etwas behilflich sein.

Willmann. Und das wäre?

Peschke (sieht sich erst behutsam um). Sie nennen mir nämlich hier im Hause alle Doktor, aber — (sich wieder umsehend, vertraulich) ich bin es nicht. Das heisst, ich bin ein Mann, der über vieles nachgedacht hat, aber der Titel fehlt mir — und dass er mir fehlt und sie mir doch so nennen, dieser Wurm nagt mich am Herzen, und darum will ich ihn mir kaufen.

Willmann. Den Wurm?

Peschke. Nein, den Doktortitel.

Willmann. Ach so.

Peschke. Man hat mir gesagt, dass es geht. In Philadelphia, wenn man eine Desperation einreicht, kann man in Absynthia promemorieren, und da wollte ich Sie bitten, wenn Sie mir so eine kleine Desperation machen wollten.

Willmann. Dissertation —

Peschke. Ganz recht — Desertation. Ja denn könnte ich auch gleich promemorieren!

Willmann. Promovieren! Wann ich die Inspektorstelle erhalte, thue ich alles für Sie, was ich vermag.

Peschke. Sie sind ein prächtiger Mensch.

The crude, imperfect language of this "Doktor Peschke" is sufficient comment in itself and it is but necessary to add that he is a barber. If one considers that this short dialogue is about the best thing in the burlesque, one can begin to understand why even the common people, to whom the entire play would appeal most strongly, should be so generally in possession of the idea that Philadelphia is the place where any one can get the doctor's degree for love and money, or for the latter alone.

That Germany, however, has no right to cast the first stone at our shortcomings in this direction is probably not generally known. Carl Vogt, who in his "Erinnerungen aus meinem Leben" so vividly pictures German university life in Giessen during the last decades of this century, states (p. 138) that the medical faculty of that university sold medical diplomas to foreigners. The faculty had two agents, one in London, the other in New York, and through these agents provided the candidates with the necessary thesis, i. e. for money, thus deriving a double pecuniary benefit out of their nefarious business. That Carl Vogt knew what he was writing about, no one can doubt, for his father was a member

of the medical faculty at Giessen. It seems worth while to relate the practice in Vogt's own words:

"Trotz aller persönlichen Würdigkeit und Gewissenhaftigkeit der einzelnen, trieb die medizinische Fakultät im Auslande einen einträglichen Schwindelhandel mit ihren Doktordiplomen, die in Hessen, wo kein Staatsexamen bestand, das Recht zur Praxis verliehen. Sie folgte dem Grundsatze des alten Kanzlers Koch in Göttingen: *Sumimus pecuniam et mittimus asinum in patriam.* Die Fakultät unterhielt zwei Agenten, einen in London, einen andern in New York, welche die Diplome *in absentia* vertrieben und damit, wie die Fakultät selbst, ganz einträgliche Geschäfte machten. Die Form wurde in Giessen streng gewahrt. Der Kandidat schickte ein *Curriculum vitæ* ein, für dessen Wahrhaftigkeit der Agent bürgte, der es sich zugleich angelegen sein liess, eine Dissertation zu liefern. Diese Machwerke wurden meist in Giessen selbst von Privatdozenten und ausserordentlichen Professoren fabrikmässig angefertigt und je nach Umfang und Menge der Citate, die von gründlicher Belesenheit Zeugniss ablegten, entsprechend honorirt. Ich will gerade nicht behaupten, dass bei einigen Fabrikanten unter dem spärlichen Mobiliar ein Schrank sich befand, ähnlich demjenigen des bekannten Botanikers Kurt Sprengel, in dessen Gefachen die Dissertationen säuberlich geordnet waren nach den Preisen; in dem untersten befand sich die laufende Waare, der Ausschuss, zu 1 Friedrichsdor, zu dessen Ankauf aber der Verfasser mit gutem Gewissen selbst nicht rathen konnte! Aehnliches aber kam doch vor, denn die Privatdozenten wollten doch auch leben."

Bibliography.

No. 1 of the Ber. d. d. pharm. Gesellsch. contains a lengthy biography of the late quinologist de Vrij from the pen of Herm. van Gelder. Comp. vol. 16, p. 469 of this journal.

The Pharmaceutical Journal speaks of the recent volume of the Proc. of the A. Ph. A. as being one of the finest series of pharmaceutical reference books in the world. This is certainly liberal praise that ought to assist in making new friends for our national association.

Rhodora is the name of a new monthly Journal published by the New England Botanical Club under the editorship of Dr. B. L. Robinson, curator of the Gray Herbarium of Harvard University. Its aim is to further the study of the local flora.

The Curator of the Museums of the Pharmaceutical Society of Great Britain, E. M. Holmes, has continued his serial contributions to the society's journal in the form of illustrated articles:

Myrrh and Bdellium, pp. 26 and 77.

West Indian Sandal Wood Oil, p. 53.

Resin, Resin Oils, and Resin Spirits, p. 98.

The 82. "Lieferung" of "Ladenburg's Handwörterbuch der Chemie has made its appearance; also Outlines of industrial chemistry by F. H. Thorp.

The Catalogue of periodical literature in the Botanical Department of the Lloyd Library will be welcomed by botanists all over the country and will add to the usefulness of this important collection of books.

From Macmillan's list of new books for February the following may here be mentioned: 1. A history of physics in its elementary branches, including the evolution of physical laboratories, by Florian Cajori, Professor of Physics in Colorado College; 2. The physician, an original play in four acts, by Henry A. Jones; 3. An introductory course of quantitative chemical analysis, with explanatory notes and stoichiometrical problems, by Henry P. Talbot, Professor of Anal. Chem. in the Mass. Inst. Techn.

CATALOGUES RECEIVED:—

F. A. Brockhaus—Leipzig. Monthly list of new books, Feb. 1899.

Lemcke & Buechner—New York. Monthly bulletin of world literature, Jan. 1899.

C. G. Lloyd—Cincinnati. Catalogue of periodical literature in the Botanical Department of the Lloyd Library.

The Macmillan Company—New York. Book Reviews, Vol. 7, No. 3.

v. Zahn & Jaensch (Antiquariat)—Dresden. Katalog No. 104: Chemie.

Pharmacopœias* as standards for the medical as well as the pharmaceutical profession have received much more attention in the current professional literature than in the year previous, chiefly for the reason that one of the standard works of the world—the British Pharmacopœia—has recently been published, the work having been finally completed after much study and investigation. An attempt was made in this revision to give it an imperial character in which every colony and dependency would have a voice in the work accomplished. The complete results are not what many of the colonies have expected, but possibly as much has been done in that line as could be, taking everything into consideration, for it is proposed to issue in about two years an appendix giving a few alternative formulæ in certain preparations, which may be made in the colonies. The new work is undoubtedly a great improvement, both from a medical and pharmaceutical standpoint, over the previous revisions. The pharmacists have had a larger representation in the work done than ever before. One hundred or more experts have had something to do with the work as it was divided up so systematically that each group of workers could work independently and turn in their results to be harmonized by the general body. A defect which might have been avoided is the question of the date of its enforcement. It has previously been the rule that when an advertisement appeared in the London Gazette stating that the new revision had been published, the date of that issue was the date of enforcement and the use of the new work became compulsory. It is now proposed, however, to allow a few months to elapse before its enforcement in order that a thorough study may be made of the changes, and not only physicians and pharmacists, but manufacturers adjust themselves to the new conditions The limit of such interim has not yet been announced. It proves to be a much more indispensable guide both to the practitioner and the student in medicine, than the United States Pharmacopœia, chiefly by having incorporated in it a few features which make it more of a reference book for them. The metric system has been used for

* From Ephemeris, 5, p. 2229.

the first time in the formulæ and placed alongside of their old standard weights, but it will be noted that the metric weights and measures are not the equivalents of the imperial ones and in carrying out the formulæ according to the two systems very different quantities of the preparation are produced. It is unfortunate that the doses are only expressed in apothecaries' weights, for physicians will now have little chance to become accustomed to the metric system as they rarely consult the formulæ for any practical purpose. A marked improvement has been made in the way of simplifying the dose question. The methods of preparation of the various articles have been so modified as to enable numerous classes of preparations to be given in doses based on some definite plan. All tinctures, for instance, taken as a whole, can be given in either large or small doses. All preparations possessing active properties would naturally be of the small dose class and likely to produce poisonous effects, therefore it is so arranged that this class all have quite uniform doses. For instance tincture of digitalis and tincture of strophantus—alternates in their action—are by this new revision given in the same dose. The class of preparations which are given in large doses are grouped together in a similar way. The plan which was adopted by the revisers of our present U. S. Pharmacopœia of so relaxing the requirements of the mode of manufacture by a prescribed formula, has been adopted by the revisers of the British standard, so that a particular process is quite optional. The quality of the finished product must, however, always come up to a fixed high standard, and there has been no relaxation of the standard of purity. The principle of standardization has been used to a greater extent, but not so fully as was expected by many when the revision was first undertaken, for the reason that it was found quite impracticable to make it anywhere near general in its application. To those who only view the question quite superficially it would seem that standardization was the only proper plan to follow out completely, but when it is remembered that the amount of alkaloidal principles are not uniformly in direct and constant ratio to their therapeutic activity, it becomes evident that the application of such a principle cannot be made general, for the reason that medical knowledge does not keep pace with chemical. Among the additions acknowledged now in this revision are a class of preparations called concentrated vegetable liquors ("Liquores Concentrati") for which it is hard to realize the practical reason. They seem to be something like a cross between the tinctures and fluid extracts and evidently aim to represent concentrated infusions, so-called.

Another prominent addition is the recognition of the thyroid extract. A 'Thyroid Solution" has been introduced also and is described as "a liquid prepared from the fresh and healthy thyroid gland of the sheep." The characters of this solution are described as follows: "A pinkish turbid liquid, entirely free from any odor of putrescence. It must be freshly prepared, and kept in well-stoppered, sterilized bottles. 100 minims (or 6 cubic centimetres) represent one entire thyroid gland." The dose is from 308 to 924 milligrammes (5 to 15 minims).

The revision of the German Pharmacopœia is now in progress, for the Committee on Revision have already met in session and is undoubtedly at work.

A supplement to the 1893 edition of the Danish Pharmacopœia — the last edition — was published early this year and contains formulæ of some of the newer synthetic products.

A new Venezuelan Pharmacopœia was issued during the first half of this year. The Spanish language is still employed, but the synonyms are given in Latin. Many of the newer synthetic products are included in its pages.

In preparation for the approaching revision of the U. S. Pharmacopœia in 1900 much work is being done every day. The hold-over Revision Committee which is in existence is hard at work, and will be ready to render valuable service when the publication is to be taken up. Many valuable points can be learned now from the latest revision of the British Pharmacopœia.

Commercial.

Weights and Measures* (Metric System) have advanced very markedly during the past year by reason of the progressive legislative act of the British Government, and their adoption in the new British Pharmacopœia. Parliament has thus authorized the use of the decimal system in a progressive way to the same extent as our United States Government has. Both countries therefore are on an equal footing in regard to the change in the system, although the English Government are much behind in their authorization of its use, for the United States Congress passed the progressive act in July 1866. The Pharmaceutical and Chemical Journals of England have taken hold of the matter in a rational way by stating that in future they propose to state all the quantities mentioned in their reading matter in terms of the metric system, giving equivalents were thought necessary and proper. They make use of the table of equivalents given in the U. S. Pharmacopœia, but naturally their fluid measures in the old system differ from those in this country, so that their equivalents in volume differ slightly. It is strongly recommended now that the most practical mode to proceed with in this new system, is to immediately secure weights and measures in that system, and learn to not only use these appliances mechanically but to think in the new system, only making use of the equivalents when necessary to convert from time to time. If the conversions are to be used every time a weight or measure is mentioned, there will be much loss of time and the liability to inaccuracies increased.

The various consuls of those countries not now using the metric system are constantly advising their home government of the uselessness and expense of exporters forwarding trade circulars, catalogues and price lists calculated in their individual system. The latter countries are so well satisfied with the wisdom of the change they made, some of them long ago, that trade is actually discouraged to some extent with those countries who have not yet fallen into line.

As alluded to in previous years Russia has been leading up to this change for some years and has been adopting various means to facilitate the overthrow of the old system at some fixed date. It is now reported that the Minister of Finance has obtained the imperial authority to make definite preliminary arrangements for the accomplishment of this change.

In Turkey, even, the proposal to permit the use of this system alongside of their present one is now being seriously considered.

* From Ephemeris, 5, p. 2287.

Pharmaceutical Review.

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Editorial.

On another page of this issue we publish Prof. Lloyd's exposure of the "Husa" fraud. With full information at hand, this case of deception appears fully as gross as that practised by ignorant natives when e. g. they weighten sarsaparilla packages with rocks. Yet many an intelligent physician and medical editor was deceived by this fraud. The Review also was deceived to the extent of publishing a short notice abstracted from one of the foremost medical journals. Pharmacy and the Eclectic school of medicine, so often looked down upon by "regular" physicians, may justly be proud of the man who has fearlessly attacked this almost unrivaled fraud.

At the White Mountain meeting of the American Pharmaceutical Association in 1892[1] Dr. Hoffmann brought up for discussion the advisability of utilizing the money then and even now spent for prizes by the various colleges of pharmacy for graduate scholarships or fellowships. The discussion which resulted indicated clearly that the nature and function of graduate scholarships and fellowships was but little understood by most members of the Association. In an article entitled "A plea for pharmaceutical fellowships"[2] the writer early in 1894 expressed the hope that our national association might not only supply an opportunity at its annual meetings for discussing the advancement of pharmaceutical education, but might do something far more valuable by establishing a pharmaceutical fellowship. It was thought best that such a fellowship should be a travelling or

[1] Proceedings A. Ph. A. 40, p. 324.
[2] This journal, vol. 12, p. 54.

foreign fellowship. The discussion of details as to how the fellowship was to be awarded etc., it was considered wise to leave to the Association after such a fellowship had been agreed upon. At the Asheville meeting, in September of the same year, President Patch[3] strongly urged the establishment of a foreign fellowship for three years and presented a detailed scheme of the method of election, duties of the fellow, etc. The Committee to which the President's address was referred reported at a later session that, "while in full sympathy with the spirit that prompted the recommendation..... that irrespective of other considerations, the financial condition of our Association will not warrant its assuming the responsibility that the establishment of such a scholarship would involve, and, therefore, cannot recommend its adoption."[4]

Owing to the strennous efforts of our finance committee during the past few years, our Association is again prosperous financially. Not only does the report of the Treasurer[5] reveal a handsome balance in the general treasury, but the report of the Chairman of the Council[6] also reveals the fact that the Life Membership Fund yielded during the past fiscal year $425.00 in interest; the General Fund yielded $120.00 during the same period. The time for reviving the fellowship idea, therefore, seems to have arrived. The Association without detriment to its finances can offer a fellowship of from $400.00 to $500.00. If it is thought desirable to still increase these funds, the interest might be added to the principal every other year, thus making a fellowship available once in two years. It seems extremely desirable that the Association should take a lead in matters educational. Its recommendations will at all times carry the more weight if it also does something, and what could be more creditable to our Association, both at home and abroad, than sending a worthy representative from our colleges and universities abroad every year or even every other year to perfect himself and to return with a richer mind and fresh enthusiasm for American pharmacy, of which he might justly feel proud under the circumstances.

It would be short-sighted to suppose for a moment that a foreign fellowship, the only kind that is conceded practical, would not react

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[3] Proc. A. Ph. A. 42, p. 9.
[4] ibidem, p. 78.
[5] do., vol. 46, p. 39.
[6] do., p. 94.

favorably on our own pharmaceutical institutions. Every college and school that has opportunities for advanced work would soon find some of the best of its undergraduates desirous to continue work after graduation with the hope of acquiring that qualification which might make possible a year abroad. Each institution would be desirous of aiding such students to its utmost capacity, and money now spent in prizes might soon be turned to a better purpose. Those institutions who at present offer no facilities for advanced work would soon strive to provide them. There would be less talking and more doing in bringing about genuine advancement of pharmaceutical education. A little yeast would thus leaven the entire dough. Can anything be imagined the immediate and ultimate result of which could bring greater good to American pharmacy?

If, after having read the annual addresses of the presidents of the American Pharmaceutical Association, one were to make a study of their direct effect on pharmaceutical progress, the result might not prove very encouraging to any one about to prepare such an address. No doubt, our presidents have as a rule spent much time and thought in the elaboration of their addresses and also as a rule, have had the satisfaction of having been listened to patiently by their audiences. The principal reward they can have had must, however, have lain in the consciousness of the honor of the position. Elaborate historical reviews of the past by a critical mind may be of special value educationally to those who have lived through the period reviewed as well as to the younger members who are thereby initiated into the earlier life history of the association and of the calling it represents. Recommendations, whether based on experiences of the past or on analogies, may be of equal or even greater value. However, the greater the importance of such recommendation, the farther reaching its character, the less apt is it to receive that attention in a busy hour of a session or meeting which it deserves. To counteract lack of action as well as overhasty action, associations have, as a rule, referred recommendations contained in the addresses of their chairmen to committees for such thought and study of details as time might permit.

Last year our attention was called to the fact that a committee appointed ten years since had failed to make a report—at least a public report—on the recommendations of the President of our

association at the Detroit meeting in 1888. At the Baltimore meeting a committee was appointed to make a report on the address of Professor J. U. Lloyd at the Put-in-Bay meeting this coming summer. Inasmuch as this report may cause a discussion of subjects of vital importance to pharmacists in general, it can do no harm to look somewhat into the history of this address and the apparent neglect of the committee to make the customary report.

Professor Lloyd's address will be found in vol. 36 (pp. 3—16) of the Proceedings. None of the journals consulted contain it in full. The Review appears to be about the only journal which published it in large part.* The American Journal of Pharmacy enumerated the various subjects touched upon. The Western Druggist called attention to several of these subjects. Other journals did even less. The editor of the Pharmaceutical Record† went even so far as to say of the address that "not all of it was in accord with the time and place" evidently because "it dealt with numerous abtruse questions of business polity."

The twenty-four topics discussed briefly or somewhat at length as taken from the Am. Journ. of Pharmacy are as follows:

1. Members should encourage apprentices in obtaining pharmaceutical education and in making pharmaceutical preparations.

2. The influence of modern pharmaceutical factories is sketched.

3. The drift of the times points to the necessity of the apothecary of the future graduating in medicine as well as in pharmacy.

4. Can pharmacists pay a percentage to physicians for prescription favors?

5. The prescribing, under assumed names, of mixtures, keeping of formulas secret, is not consistent with pharmaceutical ethics, and is neither elevating nor dignified in either participant.

6. Legislative action requiring the label of each patent medicine to plainly indicate the composition.

7. Counter prescribing, considering the right of an individual to self-medication, and the qualification of the recommender.

8. Patents for the improvements on apparatus applicable to the preparation of pharmaceuticals and chemicals.

9. Patents for synthetical processes for medicinal agents.

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* Vol. 6, pp. 229—234.
† Vol. 8, p. 287.

10. The sale of patented, trade-marked and copyrighted preparations.

11. The manufacture of secret mixtures for popular self-medication.

12. The selling of secret preparations by apothecaries.

13. The manufacture of secret preparations in bulk for others.

14. The exclusive use of a trade-marked name invented for a simple mixture.

15. The protection by trade-mark or copyright for prints, labels, etc.

16. The copyrighting of books written exclusively for pharmacists and physicians.

17. The dispensing of preparations protected by copyright, patent or trademark.

18. The manufacture of pharmaceutical preparations, for which the ingredients are given, but the working process is withheld.

19. Property in advantageous methods for preparing valuable constituents from crude drugs.

20. The use by the pharmacopœia of the results of individual research.

21. Is it proper to label a substance as though manufactured by us when in reality it is only selected or perhaps purified?

22. The introduction into the pharmacopœia of liquid preparations representing in two minims one grain of the drug.

23. The election, besides a president, of a presiding chairman with parliamentary experience and knowledge.

24. Rigid examinations by state boards and education of assistants at colleges of pharmacy.

25. Salaries to the secretaries of sections.

According to custom, the address was referred to a committee consisting of Messrs. John Weyer, Geo. W. Sloan and Jos. L. Lemberger. This committee submitted the following report at the last general session of the Detroit meeting:

"The Committee to whom was referred the President's address, would respectfully report that they have carefully reviewed the same, and find it impossible to give complete report in the limited time at their disposal.

"There are, however, two subjects that should have prompt attention in our judgment; viz., Section 22, which refers to a new line

of preparations; this in our opinion should be referred to the Committee upon the Revision of the Pharmacopœia. Also Section 25, which recommends that the Secretaries of the Sections should receive sufficient compensation to enable them to meet the necessary expenses of attending the meeting. Upon the remainder of the suggestions offered in this valuable address, your Committee would ask the privilege of reporting at a later date to the Council for publication."

The published minutes give us the following additional information:

"On motion of Mr. Good, the recommendation, referring to a new class of preparations, was adopted, and the subject was referred to the Committee on the Revision of the Pharmacopœia.

"The second recommendation, relating to the compensation for the Secretaries of the Sections, was, on motion of Mr. Sheppard, referred to the Council.

"On motion of Mr. Painter, the request of the Committee was granted, to report to the Council, for publication, upon the remaining suggestions of the President's address."

In his report on this action, Dr. Hoffmann makes the pertinent remark*: "Whether or not the questions brought up for discussion are hereby laid *ad acta*, as is usually the case, will become apparent later." That this was actually the case we were told last summer.

The Committee of Revision of the U. S. P. to which was referred one of the recommendations reported the following year: "That alcoholic preparations representing 50 percent of the drug be adopted so far as practical, and replace fluid extracts and tinctures."† This recommendation was adopted by the Association after a brief discussion on the part of three members.‡

Whether the recommendation referred to the Council was acted upon by this body does not become apparent from its minutes.§

Neither do the minutes give a record of further recommendations which the Committee on the President's Address promised to make. It would be of interest to the members of the American Pharmaceutical Association to learn whether this committee ever made a report to the council.

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* This journal, vol. 6, p. 234.
† Proc. A. Ph. A. 37, p. 39.
‡ ibidem, p. 48.
§ do., pp. 7, 28 & 50.

An Investigation into "Husa," an Asserted Plant Preparation to Cure the Opium Habit.*

By *John Uri Lloyd.*

In February, 1898, The Texas Courier Record of Medicine, p. 195, in the leading article, under the head, "Practice of Medicine," published a paper by W. W. Winthrop, A. M., M. D., Forth Worth, Texas, entitled, "Singular Discovery of a New Florida Plant, that is an Antidote for Snake Poison, and a Cure for the Opium and Morphine Habit."

In substance, the author states that in Florida he found a negro who had a secret antidote to poisonous reptile bites. This negro would allow two immense rattlesnakes to bite him with impunity. To use "Dr. Winthrop's" words, "These snakes he would irritate any number of times a day and allow to bite him on the hand, arm, breast or any place indicated. This I saw frequently and investigated. After each bite he would take a mouthful of some herbs which he carried in a little bag, he claiming that these herbs counteracted the effects of the bites, which they evidently did."

Naturally, the author endeavored to identify these "herbs," but the negro refused to divulge his secret. He then made the negro drunk and learned that, "Boss, de is viellies an' husen, an' I gets 'em from the Semmes in de dales," which the author interpreted as, "Seminole Indians who live in the everglades." At once he started for the everglades, but found that "I could elicit nothing from the Indians, men or women." None would give up the valuable secret. Then came a friend in need in the form of a remarkable naturalist from Scotland who supplied the missing information, the event being chronicled as follows:

"Just as I was about to give up the matter in disgust I met a Dr. McGregor, a Scotchman from the University of Aberdeen, Scotland, who has spent many years in Florida and along the Gulf coasts. He was gathering orchids and other plants for his university or museum. From him I learned all I wanted to know. "Viellies an' huser," as translated by him, means the spear-eared violet, *viola*

* Summary, prepared by the author, of a paper read at the joint meeting of the Cincinnati Section of the American Chemical Society and the Cincinnati Academy of Pharmacy, University of Cincinnati, March 15, 1899.

sagittata; "huser" is husa, so called by the Indians, sometimes hoosu; the whites call it yousa and yusee."

Proceeding, the author (Dr. Winthrop) informs us that "The viola sagittata has long been known as possessing antidotal properties for snake poison. The eclectic school of medicine use it for many purposes. Husa, however, is not much known. It is an unclassified plant of a dirty whitish-green color, about two or three inches long. It has at its summit a ball-like white formation. Where the flower should be this is hard, slightly lobulated, and is to all appearances like a small cauliflower. It grows in clumps, in moist, shady places, particularly on the hammocks at the roots of the cabbage palms. It is of a low order of plants, above the mosses; it is, I believe, a cryptogam."

Thus it appears that this mixture of herbs that the negro used was (Winthrop) a mixture of two plants, one (viola sagittata) long, according to the author, known to eclectic medicine, the other (husa), unclassified. But, while the first of these was, according to the author, used by the eclectics in snake bite, etc., the second, unknown to science, was a remarkable cure for the morphine habit. This is asserted as follows: "From Dr. McGregor I learned that it is a perfect antidote for all snake bites, stings of insects, etc., also an antidote for narcotic poisons. It is the most diffusible stimulant known, acting immediately. It is, owing to these two last mentioned properties, that it has been found to be so efficient a remedy for the opium habit. I have tested it beyond question, and in every case, without one single exception, it is found to be a perfect cure. It takes the place of opium or morphine. Supporting the patient fully, it is sedative but not narcotic. It produces slight elation, but no somnolent effect. To use the illustration of one physician who cured himself of the opium habit with it, a habit of twenty-three years' standing, and using forty grains sulph. morph. daily. As soon as I learned its properties, I sent some of the husa plant to several doctors I knew who used morphine; they one and all pronounced it 'a perfect success.' I have never known of a failure when the patient wanted to be cured. In the hands of a careful physician this remedy will be found efficient in the worst cases of drug addiction. * * * * With husa, physicians can cure their patients addicted to the use of opium, morphine, etc., instead of letting them get into the hands of quacks."

The paper ends with the statement that "Any physician interested in this matter will find me willing at all times to give him all the information I possess on the subject."

Soon following this came a leading editorial in The New York Medical Journal (April 16, p. 538, 1898), based on the foregoing paper from The Texas Courier-Record, in which the editor finally remarked that "It is to be hoped that the botanists will give us some information about 'husa,' and that its medicinal virtues may be inquired into systematically." Succeeding this, The New York Medical Journal, June 25, 1898, gave place to a long personal contribution from Dr. Winthrop in which the "husa" herb is highly lauded as a cure for the opium habit.

Naturally, this conspicuity brought orders for husa to dealers in American drugs and plant products. However, since such a thing as "husa" is unknown in trade, the Lloyd Library was asked to give its habitat and description. And lastly, since "Dr. Winthrop" used the name *eclectic* in connection with his wonderful discovery, it was natural that from the study I have made of eclectic medicines, I should be importuned, both by pharmacists and by physicians, for information on this subject. This accounts largely for the interest I exhibit in bringing "husa" before this Society. I have before me a mass of correspondence on this subject, which I shall answer as follows, giving some information to those concerned.

In the first place, viola sagittata is not used in eclectic medicine. It was introduced by Dr. John Fothergill, under the common name arrow-leaved violet, in 1775. It was first on record under its botanical name in Aiton, Hortus Kewensis, 1789, Vol. III, p. 287. It is not to be found in King's American Dispensatory, nor in Scudder, Webster, Watkins, Ellingwood, nor in any other authority of that school, and I have never known an eclectic physician to use it. In the second place, the description "Dr. Winthrop" gives of the plant "husa," corresponds somewhat to *monotropa uniflora*, (Indian pipe), a very well known plant (if it refers to any known plant) but as this "fit plant" is recommended in eclectic literature, (see King's American Dispensatory, p. 606) as a substitute for opium, it could not be husa, which Dr. Winthrop asserts is unknown and unclassified.* In the third place, I shall take exception to the professional

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* Mr. C. G. Lloyd states that *Monotropa uniflora* grows in abundance in sections of Florida where he has botanized.

form of the following statement, that "Dr. Winthrop" sends in circular letter to physicians who apply to him for "husa." I have too much confidence in American naturalists to believe that any plant unknown to botanists is found and gathered by the boat load by "two plume bird hunters."

When "Dr. Winthrop" was written to, he refused to supply any herb whatever, returning the money, and writing to the following effect, which is the reply given one physician.

"Respectfully returned with reply, that I never send plants, it is impractical. They do not bear transportation well. I have to have extract made in Florida, and then diluted into three degrees of tincture for prescription. Plants would be of no use to you, or even crude extract. The action of husa is peculiar—it is the most diffusible stimulant known."

I will add that no difficulty whatever was experienced in getting this liquid; $10 for thirty fluid ounces, notwithstanding the rarity of the herb.

A responsible physician sent "Dr. Winthrop" $10, receiving therefor a regulation supply which he used according to instructions, with a patient subject to the opium habit. At my request, he sent another $10 and received another month's supply, which was sent to me unopened, with an affidavit to the effect that it had not been touched by him, simply addressed in the express to me. On opening the box, I found ten three ounce vials numbered with printed labels from 1 to 10 successively. On each label was the physician's name, and the words One Month and the word Poison, nothing else; not even the famed name "husa."

The letter accompanying the box contained a four-page circular in which occurs the statement that "husa is not narcotic." In addition, I take from this circular of "Directions" as follows:

"Stop at once your opiate, and under no circumstances take morphia, opium or any narcotic drug treatment, as ever so small a dose would interfere with your otherwise certain cure. Narcotics and husa are physiological opposites, and even dangerous symptoms might ensue from taking them together. At no time during treatment will you feel like taking opiates; in fact the remedy will support you more satisfactorily without the heavy, deadening effects, and you will be better able to attend to your duties than while taking opiates.

The vials contained liquids of a uniform brown red color, such as burnt sugar imparts to water. Preliminary tests made on a specimen of husa (No. 8), obtained previously, had demonstrated that its contents were: Morphine, approximately, 1.3 per cent.; salicylic acid, .16 per cent.; alcohol, 12 per cent.; glycerine, 10 per cent.; water, q. s., and coloring matter. The morphine was a sulphate. Systematic assays were then instituted with the ten vials to determine the morphine strength of the various liquids. The result is as follows:

Twenty-five cc. of each liquid were evaporated to about 5 cc. and then brought to the measure of 10 cc. with water. To the product were added 3 cc. of alcohol, 6 cc. of ether and 1 cc. of ammonia (10 per cent). The mixture was shaken frequently until all the morphine was separated, when it was washed and weighed in the usual manner (U. S. P. process).

Result.—No. 1 contained 2.19 per cent. morphine; No. 2, 1.98 per cent. morphine; No. 3, 1.95 per cent. morphine; No. 4, 1.72 per cent. morphine; No. 5, 1.55 per cent. morphine; No. 6, 1.46 per cent. morphine; No. 7, 1.59 per cent. morphine; No. 8, 1.59 per cent. morphine; No. 9, 1.43 per cent. morphine; No. 10, 1.33 per cent. morphine.

To sum up, viola sagittata is not an eclectic remedy, for the reason that the name does not occur in eclectic literature, and the drug is not employed by eclectics. "Husa" is said by "Dr. Winthrop" to be an undetermined plant (unknown to science), found by two plume bird hunters and gathered by them by the boat load. My investigation of "husa," as sold by its discoverer to his professional patrons, is to the effect that "husa" is a liquid containing large amounts of sulphate of morphine, some salicylic acid, some alcohol, water, glycerine and coloring matter, probably burnt sugar.

It is sold to physicians at the rate of $10 for about 234 grains of morphine. In support of this view, I offer the foregoing testimony and submit herewith the morphine obtained from a 25 cc. of each liquid. Until I am furnished with a new plant containing morphine to the extend found in these experiments, I shall accept that "husa" is a concoction.

In conclusion, I take pleasure in extending thanks to Dr. Sigmond Waldbott for laboratory assistance, and to the physician who obtained for me the "husa" preparation from "Dr. Winthrop."

The Rhizotomists, the Predecessors of the Apothecaries.*

By *J. Berendes.*

The part played by the Rhizotomists (ῥιζοτόμοι), root cutters, root diggers, herb gatherers, has been differently regarded by different authors. The first mention of them occurs in a writing[1] falsely ascribed to Hippocrates and included in the *Hippocrateskorpus,* in which the great physician of Cos demands that the rhizotomist, Krateuas, provide him with medicinal plant substances. "Gather herbs (βοτανολόγησον) in kind and quantity as you are able and send them to me. The best man of the city, (the philosopher) Demokritos, is concerned..... Collect the plants that grow on mountains and high hills since they are better (στερεώτεραι) than those more watery because of the compactness of the soil and the rarity of the atmosphere..... All juices and liquids send in glass vessels, the leaves and the flowers in well closed earthen vessels." At the same time the writer of the letter calls Krateuas "the best rhizotomist on account of his practice as well as on account of the fame of his ancestors." In this letter, which, although apocryphal, is not without objective and historical value, the occupation of the rhizotomists is, first of all, plainly indicated. They are represented as supplying the physicians with fresh sap of plants as well as with crude drugs. A training (ἄσκησις) more or less extended in the selection and working up of the latter as well as in the preparation of the former is attributed to them. It also follows clearly from the words of the writer of the letter that the occupation of the rhizotomists was hereditary in the family. The prevailing tone of the entire letter leads to the conclusion that Krateuas enjoyed the respect of physicians in especial measure.

Theophrastus[2] regards the rhizotomists in a like manner when he says: "τῆς δὲ ῥιζοτομίας οὐκ εστὶ τοιύτη διαφορὰ πλὴν ἐν τᾶις ὥραις οἷον ϑήρους ἢ μετοπόρου, for the digging of roots the difference (in the time of the year) is not so great, outside of spring and late autumn." In another place[3] he gives rules and directions concerning the digging of roots and the collection of herbs, leaves, flowers and fruits, and

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* Translated from Apt. Ztg. 14, p. 93, by Dr. R. H. True, Ass't. Professor of Pharmacognosy, University of Wisconsin.

[1] Hippocrates ad Cratevam.

[2] Hist. plant IX, 8.

[3] l. c. XX, 20, (8); 23, (96).

commends the rhizotomists who intelligently and conscientiously follow their business and who, therefore, also maintain good relations with the physicians. Thus he calls Thrasias of Mantinea a very experienced judge of roots, who has compounded an infallibly fatal poison from the juice of the poppy, the hemlock and similar plants; he praises also Alexias, the pupil of Thrasias, not only as a skillful and experienced man in his work, but also as a master along every line of knowledge concerning drugs.[4] On the other hand, he directs words of sarcasm against those who in digging roots and gathering herbs make use of all kinds of jugglery and superstitious nonsense, such as, when collecting Klymenon (*Calendula arvensis*), Glylyside or Paeonia not to permit to be seen by the woodpecker; when digging Asclepian Panakes (*Echinophora tenuifolia*) to throw a honey-cake of spring wheat on the ground as a reward while offering prayer, and when collecting mandragora or hellebore to draw three circles with a two-edged sword, etc. This kind of humbug, calculated in part to prevent troublesome competition, in part to clothe the business with the never failing mantle of mysticism, can be laid to the account of the lower elements only.

It is plainly these on whom Galen,[5] the aristocratically inclined physician, who wished to have medicine regarded as the most distinguished of the arts and sciences, delivered judgment in the following words: "As the architect is related to the builder, carpenter and other handicraftsmen, so the physician in his high calling (as ruler) is related to his under-workmen (ἀρχικὸς ὁ ἰατρὸς πρὸς τοὺς ὑπηρέτας), the rhizotomists, *Spezereiköche*, administerers of enemas, blood-letters, cuppers, etc."

As we shall see later, Dioscorides and Pliny give us no information on this point.

Among the later writers, Sprengel[6] first expresses himself concerning the position of the rhizotomists. "Medicinal plants," he says, "were gathered by the root diggers (Rhizotomists) oftentimes with superstitious ceremonies. Many among these prepared compound remedies from plants were known as Pharmacopolists, among whom Thrasias of Mantinea, Alexius, Eudermos, Aristophylos and Aristotle himself are mentioned"—and further, "It was, indeed, a result of independent leisure and of the superfluity of physicians that about

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[4] l. c. IX, 16, (8).
[5] Comment. 5 in libr. epidemior Hippocr.
[6] Gesch. der Arzneikunde I, S. 351, 355; Gesch. der Botanik I, S. 100.

this time, as Celsus reports, isolated parts of medicine were worked on and practiced by individual physicians exclusively. The celebrated separation of medicine from surgery and from rhizotomy or the apothecary's art[7] was caused mainly by the over-supply of physicians in Alexandria and the leisure of this class..... Their pride caused them to regard surgery and rhizotomy as their servants and after this time there appeared in the Hippocratic oath the clause that 'one is to withold himself from cutting for stones (operating for calculus) and leave this business to the handicraftsmen (τοῖσον ἐργάτησιν).' Since this time the rhizotomists have been the helpers of the physicians."

As is easily seen, Sprengel relies upon the judgment of Galen who places the rhizotomists among the artisans, for the service of whom the physicians held themselves in too high regard. He groups them with the pharmacopolists, some of whom prepared compound remedies, and calls them without ceremony apothecaries. This is not by any many means true, since, as said before, Theophrastus attributes to Thrasias especial knowledge and credits Alexias with great expertness in the remaining parts of medicine. It is, therefore, not improbable that some were at the same time physicians.

It must be taken into consideration that Galen judges the men and their aims during his time, when toxicolgy was the play ground of the Alexandrian physicians, dilettantes and smatterers.

An astonishing number of prescriptions for medicinal compounds originate at this time, which are prepared and used by the authors themselves and in a manner patented in part with their own names, in part with other high-sounding designations. When Galen terms the rhizotomists handicraftsmen, he does so in the character of the highly educated Greek who esteemed mental activity only and held all manual work to be below his dignity. He distinguishes the architect as the intellectual originator of a structure from the builder who executes his plans. It is hardly to be thought that, in his scrupulousness as a physician, with his high opinion of the action of medicines and of the philosophically subtile manner of their compounding,[8] he would have trusted the preparation of prescribed remedies to the rhizotomists. It is no more to be thought that he would have given over to helpers surgery, that field of medicine so

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[7] Behrendes, die Pharmazie b. d. alten Kulturvölkern I, S. 251 ff.

[8] Galeni op. omn. ed. Kühn, tom. XIII, S. 366; tom. XIII, S. 372, 367: tom. XIV, S. 30. 220, 249; tom. XI, S. 405.

successfully developed by the great predecessor whom he so highly respected, Hippocrates.

Meyer[9] refrains from judgment concerning the rhizotomists. "In general we do not know in how far the physicians of those times were accustomed to avail themselves of the services of the rhizotomists or the pharmacopolists."

Hergel[10] denies to the rhizotomists all practical activity, that along the medical line excepted, and denies especially that they were the predecessors of the apothecaries.

Puschmann[11] designates them in brief as "the forerunners of the apothecaries."

Wellmann[12] does not express any opinion, but seems to favor the view of Hergel.

After what has been said by these authors and supported by the letter of Hippocrates to Krateuas, which, although apocryphal, can not be gotten rid of, we can only summarize by saying that the rhizotomists were not the forerunners of the apothecaries and also did not take the place of physicians. The medicines were prepared by the physicians themselves or their pupils (μκνήάνοντες), especially by the more advanced, the assistants, or their preparation was supervised by them.[13] Especial care is enjoined upon them if they wish to be sure of the results and action of the remedies. Such medicines as required for their preparation unusual time and trouble or which were required to be at hand at all times, were kept in store in the *iatreion* (private clinic), a large, airy, well lighted room in which operations were performed. "Let one prepare the various kinds of softening applications for special use, medicines which can cut (τέμνειν) (i. e. those acting strongly, drastics), prepared according to prescription in the individual case. Medicines necessary for purgation should be prepared, taken from the right place, properly prepared, arranged according to kind and quantity and rightly treated for preservation, further, however, also fresh medicaments for instant use and every thing else accordingly."[14]

A further confirmation of the view that the preparation of medi-

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9 Gesch. d. Botanik I, 12.
10 Die Rhizotomen, Programm des K. K. Obergymn. zu Pilsen. 1887.
11 Alexander v. Tralles I, 4.
12 Kratenas, Abh. d Königl. Gesellsch. d. Wissensch. zu Goettingen. Phil. hist. Kl. Neue Folge, Bd. 2, No. 1.
13 Fuchs, Hippokrates sämtl. Werke de decenti orn. 8, sgg. 17.
14 De descent orn. 10.

cines was a duty of the physician appears from what Galen[15] says concerning the composition of the Antidota and Theriaca: "The best drugs should be made use of. They are not, however, to be had in sufficient quantity in other places, hence not only the best physicians (*οὐχ οἱ ἄριστοι μέντοι τῶν ἰατρῶν*) in home prepare these sorts of antidotes, but also the dealers in salves (*μυροπῶλαι*) who all blunder more or less even though they do not prepare entirely useless medicaments." This is further shown by the reference in Pliny, where he considers the *Lapis Chrysites* the most useful for making mortars for the use of physicians.[16] In another place[17] (the discussion of copper preparations), he laments: "But of all this the physicians understand nothing, the greater number of them not even the names, so little do they concern themselves about the preparation of medicaments, the former prerogative of the physicians (*quod esse proprium medicinæ solebat*). Now, whenever they approach their note books and wish to compound something from them, that is, make experiments at the expense of unfortunate ones, they trust to the *Seplasia*, who ruin everything through deceit, for they (the *Seplasiarii*) sell plasters and collyriums." These same *Seplasiarii* had usurped to themselves the dispensing of medicines as in this day many small druggists have done.

Assay of Nux Vomica.

By *W. O. Richtmann.*

In the assay of the unfinished preparation, viz. the evaporated percolate, for the purpose of making the extract or fluid extract of standard strength, The U. S. Pharmacopœia refers to the directions given under the extract of nux vomica (p. 154). With the exception of the weight of the material to be assayed, the same quantities are to be used as for the finished solid extract.

Trouble has been caused by the fact that the amount of decinormal sulphuric acid (10 cc.) directed for 2 gms. of extract of nux vomica (containing 15 p. c. of total alkaloids) is not sufficient for combination with the total alkaloids in 4 grammes of the evaporated percolate.

[15] Tom. XIV, 24.
[16] Plin. hist. nat. XXXVI, 2.
[17] idem l. c. XXXIV, 11 (25).

The strychnine and brucine factor for decinormal sulphuric acid is 0.0364. If all of the acid (10 cc.) were used to unite with the alkaloids present, the sample would contain 0.364 gms. of total alkaloids. Since 2 grammes were used in making the assay, the percent would be 50 times the amount in two grammes or 18.20 p. c. The U. S. P. requires 15 p. c. of total alkaloids to be present in the finished extract. For this amount the quantity of acid is sufficient.

Not so, however, in the preliminary test of determining the amount of total alkaloids present in the evaporated percolate in order to dilute the finished product so as to make it of pharmacopœial strength. Three samples of powdered nux vomica which by previous assay were found to contain 2.25 p. c., 2.26 p. c., and 2.30 p. c. of total alkaloids were used in the following experiments. The percolate obtained according to the pharmacopœial process was evaporated as directed, to one-fifth of the weight of the original drug, viz. from 1000 gms. to 200 gms. The alkaloidal strength was thereby practically increased five fold, so the percentage would be 2.25 p. c.×5=11.25 p. c. Now supposing all of the 10 cc. of decinormal sulphuric acid to be used in combination with the alkaloids it would indicate the presence of 0.0364×10 or 0.364 gms. of alkaloids. Since 4 gms. were used, the percentage strength would be 0.364×25 or 9.10 p. c. This then is the greatest amount of alkaloids that can be present to react with 10 cc. of decinormal sulphuric acid. An amount over and above this percentage (9.10 p. c.) will be present as free alkaloids and give alkaline reactions with indicators.

Such was the case with portions of the evaporated percolate of the three commercial samples above mentioned. By adding 15 cc. of decinormal sulphuric acid, an acid reaction was obtained in the acidified extract and after titrating back, results were obtained corresponding very closely with the original assays (2.22 p. c., 2.24 p. c. and 2.25 p. c).

Those who have met with difficulties in the assay of the extract of nux vomica, can easily overcome the one to which attention has herewith been called by using a somewhat larger amount of acid.

As a further change in the pharmacopœial process for the assay of extract of nux vomica, decinormal caustic potassa should be employed in place of the centinormal caustic potassa solution. The slight increase in error of reading the end reaction is not sufficient to call for the use of the more dilute solution. See also E. R. Squibb

in Jour. of the Am. Chem. Soc. 21, p. 353). Finally, cochineal has been found more serviceable than Brazil-wood as indicator, as the end reaction is equally as delicate, if not more so, than in the case of the latter and, furthermore, the solution when prepared is more stable than that of Brazil-wood.

Laboratory for Practical Pharmacy, University of Wisconsin.

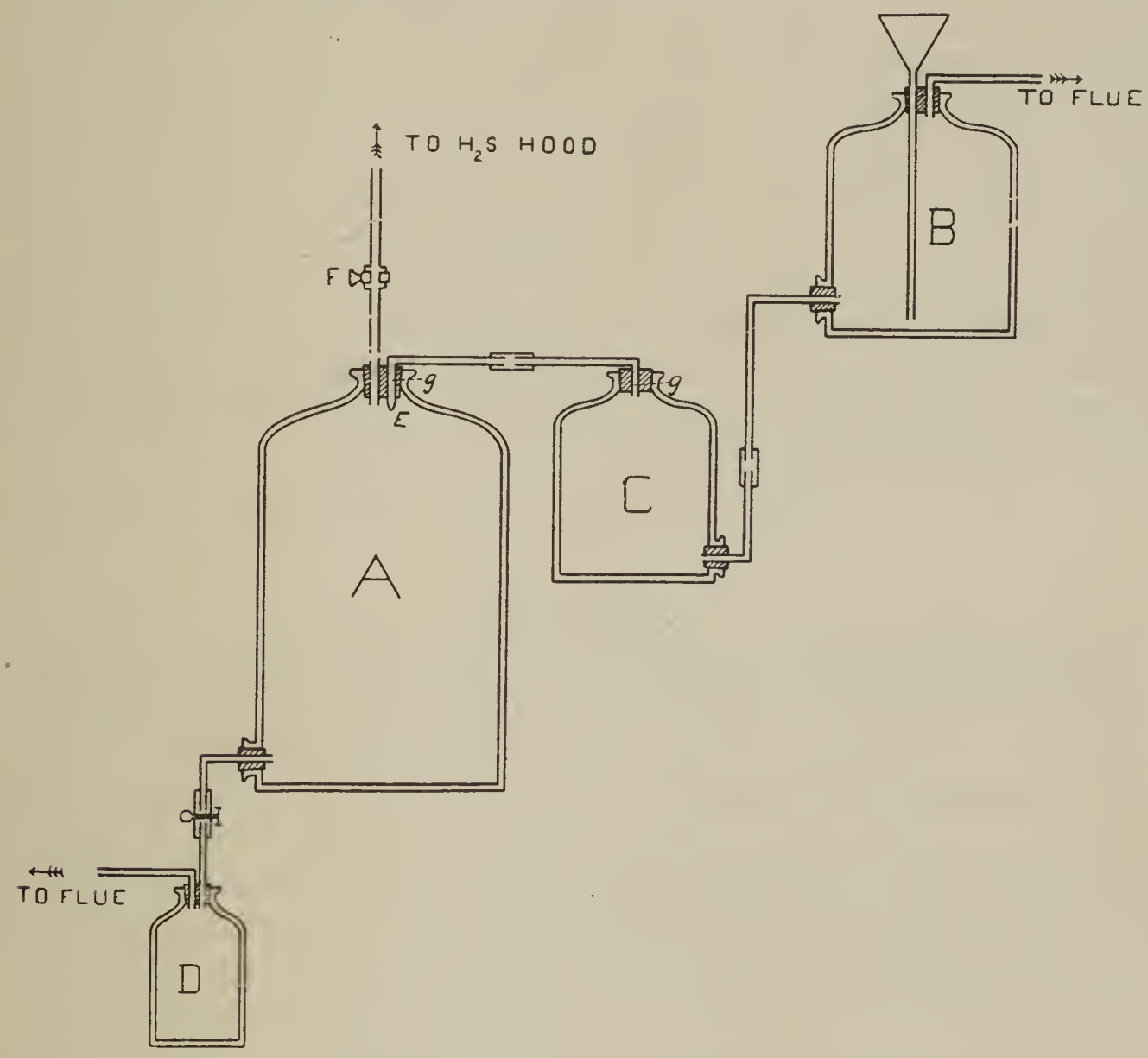
MONTHLY REVIEW.

Pharmaceutical Technique.

The Nernst Electric Lamp. — Walter Nernst, of the University of Göttingen, has recently devised an electric lamp which promises to be an important addition to our present methods of lighting. The part of the lamp which emits the light consists of a small rod of highly refractory material, said to be chiefly thoria, which is supported between two platinum electrodes. The rod is practically a nonconductor when cold, but by heating it (in the smaller sizes a match is sufficient) its conductivity is so raised that a current will pass through it; after the current is once started, the heat produced by the resistance of the rod is sufficient to keep up its conductivity, and the latter is raised to a state of intense incandescence, and gives out a brilliant white light. As the preliminary heating by means of a match or other flame would in some cases be an inconvenience, Nernst has devised a lamp which, by means of platinum resistance attachment, can be started by simply turning a switch. The life of the rods is about five hundred hours. The lamps are said to work equally well with either alternating or direct currents, and there is no vacuum necessary. If this lamp proves a success as a commercial apparatus, it will be but another example of how slight a matter may make all the difference between success and failure. There have been numerous experimenters trying for the last ten years, and in fact ever since the appearance of the arc lamp, to utilize in an electric lamp the great light-giving power of the refractory earths in a state of incandescence; but, owing to their high resistance at ordinary temperatures, no results were obtained until Nernst thought of heating this thoria rod, and this simple procedure seems to have solved the whole difficulty. It is claimed that the Nernst lamp is a much more economical transformer of electricity into light than the present incandescent electric lamps. An apparatus called a kaolin candle, which has been suggested as an anticipation of Prof. Nernst's lamp, was constructed by Paul Jablochkoff in 1877 or 1878. It consisted of a strip of kaolin, along which ran a "match" of some conducting material. The current

was passed through this "match" until the kaolin strip became heated sufficiently to become a conductor itself. The lamp did not, however, prove a commercial success. [Pop. Sc. Monthly, 54, p. 854.] *E. K.*

A Serviceable Generator for Hydrogen Sulphide.* — W. P. Bradley of Wesleyan University describes a new form of hydrogen sulphide generating apparatus as used in the laboratories of that institution with perfect satisfaction for the last nine years. It consists of principally three bottles, *A*,



B and *C*, each provided with an orifice near the bottom. *A* is the generator proper and has a capacity of about 16 litres and is filled with large lumps of iron sulphide. The generated gas passes through *F* to the hood where as many supply stopcocks may be placed as is desirable. B and *C* are the acid supply bottles, although *C* also serves for collecting any excess of generated gas. *C* is connected with *A* by glass tubing which has been drawn out to a fine point at *E* so as not to deliver a jet of acid more than about a pins thickness. *D* is a flask into which the spent acid may be allowed to

* For the use of the accompanying cut the Review is indebted to the kindness of the editor of the Am. Chem. Journ.

run from time to time. The height to which the acid reservoir itself is fixed depends, of course, on the pressure to be overcome by the gas. *B* has a capacity of about 8 litres and *C* about 4 litres, although the size of these flasks may be changed, but their relative sizes should remain about as given. The details of the construction can be seen from the figure. The working of the apparatus is as follows: The gas pressure in *A* depends upon the difference in level between the top of the acid in *B* and the mouth of the jet *E*. When this pressure is relieved by drawing gas at *F*, a small quantity of acid flows in at the jet and trickles down through the iron sulphide. As soon as the action is fairly established, gas is produced somewhat in excess of the demand, and forcing back the acid, occupies the top of *C*. On the other hand, when the action slackens, the acid flows forward again, driving before it this accumulation. When the demand ceases entirely, gas continues to form slowly for a time, until the last portion of acid admitted is entirely spent. The gas so formed passes into the reservoir *C* and fills it from one third to two thirds full. Renewed demand for gas is met, of course, at first by this accumulated supply. Among the special advantages attending the use of this generator may be mentioned economy of acid, uniform efficiency, perfect automatism, and consequently the very slight amount of attention required.

[Amer. Chem. Journ. 21, 370.] *Oswald Schreiner.*

Chemistry.

Adulteration of Essential Oils. — E. J. Parry states that out of eighty samples of oils recently examined by him, 25 p. c. were found adulterated.

[C. & D. 54, p. 507.] *E. K.*

"Guaranteed" Oil of Lemon. — Attention is called to the fact that much "citrene," the light fractions from oil of lemon which are rejected in the manufacture of the terpeneless oils, is being sold to manufacturers of lemon oil. It is suspected that this oil returns with the proper percentage, 7 to 7.3 p. c., of citral and a dash of the true oil added as "guaranteed" oil.

[C. & D., 54, p. 495.] *E. K.*

Separation of Citronellal from Citral. — Flatau and Labbé have taken out patents on the separation of these two aldehydes based on the insolubility of the barium compound of citronellal hydroxy sulphuric acid. Barium chloride is added to a solution of the hydroxy sulphonates of sodium of the two aldehydes, separation of the insoluble barium compound of the former and regeneration of the separated derivatives by means of alkali.

[Pharm. Ztg. 44, p. 206.] *E. K.*

Alkaloids of Datura Alba. — According to the investigations of Hesse the dry blossoms of the *Datura alba* Nees. contains 0.51 percent of hyoscin

0.03 percent of hyoscyamin and 0.01 percent of atropin. The composition of the hyoscin ($C_{17}H_{21}NO_4$) was identical with that obtained from *Hyoscyamus Niger* and upon treatment with moist silver oxid or dilute sodium hydrate failed to yield atroscin. According to this, the above hyoscin is not identical with Schmidt's scopolamin, which from Hesse's investigations consist of a mixture of hyoscin and atroscin.

[Südd. Apoth. Ztg., 1899, p. 2.] *V. C.*

Gum M'beppe or Kongosita.—E. Heckel has received a gum from Senegal derived from *Sterculia tomentosa* Guill. et Perrot. Schlagdenhaufen finds it to contain 19.8 percent of hygroscopic water. It swells rapidly in cold water, but does not give a mucilage; in boiling water but 5.8 percent dissolves. If heated for four hours at 120° C. in a sealed tube with twenty times its weight of water, it dissolves completely forming a colorless liquid possessing the characters of arabin.

The new gum costs about ten francs per hundred kilograms and might furnish a cheap source of arabin and thus provide a cheap substitute for gum arabic. M'beppe gum differs from tragacanth in the following ways: With iodine, tragacanth gives a rose, blue or violet color; M'beppe gum does not give the least coloration. Tragacanth yields but 3 percent ash, M'beppe gum 7.24 percent.

[From Rev. d. Cultures Colonialles through Pharm. Journ. 62, p. 139.] *R. H. T.*

Alcornoco Bark.—C. Hartwich describes a bark coming from South America, ostensibly from *Pilocarpus microphyllus*, which has more active properties than jaborandi leaves. Since there is great difficulty in obtaining sufficient quantities of jaborandi leaves of good quality, for several years past leaves of species of *Pilocarpus* not official have appeared in great quantity on the market.

Examination has shown that this bark is not derived from *Pilocarpus*, but is identical with a bark almost forgotten, an alcornoco bark. Under this name barks from several families were included, *Cæsalpiniaceæ*, *Euphorbiaceæ*, and *Malpighiaceæ*. The bark here concerned is one of the *Cæsalpiniaceæ*, *Bowdichia virgilioides* Kunth.

[From Schweiz. Wochenschr. f. Chem. u. Pharm., 1899, p. 27; through Apoth. Zeit. 14, p. 60.] *R. H. T.*

A Higher Homologue of Cocaine.—According to F. Günther, who returns to the subject of Maclagan's test for the purity of cocaine hydrochloride, specially purified cocaine, physiologically normal in its action, does not give Maclagan's reaction, whilst on the other hand the mother liquor obtained in the process of purification naturally less pure readily answers it. In explanation of this experience of the author it is now stated that he has succeeded in separating from the mother liquors of cocaine hydrochloride

a base which gives Maclagan's reaction in a dilution of 1:2500, and its presence with cocaine causes a precipitation to ensue in a dilution of 1:1000. The base obtained from the mother liquors is easily purified by recrystallisation from petroleum ether. Its solubility in water is from 1:2500 to 1:3000, whilst that of cocaine is said to be 1:704. Pure cocaine hydrochloride, according to the author, dissolved in water in the proportion of 1:1000, corresponding for the base to 1:1100, cannot according to that solubility coefficient give a crystalline precipitate when Maclagan's test is applied. The less soluble base melts at 110—111° C., whilst cocaine melts at 97—98° C. On analysis it gave results agreeing with the formula $C_{18}H_{23}NO_4$. It yielded benzoic acid on hydrolysis and a distillate which gave the iodoform reaction. The only distinction that could be observed between it and ethyl-benzoyl-ecgonine, first synthesised by Merck in 1885, is the melting point, as the latter melts at 108°—108°. It is therefore regarded as an isomer of ethyl benzoyl-ecgonine. Both bases give Maclagan's reaction. The new base has the same left-handed rotary power as cocaine, and the same physiological action. Cocaine and the new base crystallise out together from different solvents in fine prismatic crystals, having melting points ranging from 98°—110° 5°, dependent on the amount present of the base melting at 111° C. In attempting to produce cocaine from the benzoyl-ecgonine obtained in the hydrolysis of the new base, the author obtained a base melting at 101°, which does not correspond with the melting point of cocaine, 97°—98° C. This result is ascribed to the presence of ethyl alcohol, which is said to be invariably present in commercial methyl alcohol, thus producing some ethyl-benzoyl-ecgonine as well as methyl-benzoyl-ecognine, or cocaine. This, the author infers, may be the explanation of the fact that commercial cocaine which has been prepared synthetically, answers Maclagan's test; that is to say, it may contain ethyl-benzoyl-ecgonine, or its isomer, bases less soluble in water than cocaine. The quantity of the base melting at 111° C. in crude cocaine is said to be considerable. The conclusion finally expressed by the author is that Maclagan's test is of no value as a criterion of the purity of cocaine hydrochloride; on the contrary, he states that when 0:10 Gm. of pure cocaine hydrochloride is dissolved in 85 C. c. of water and 0:2 C. c. ammonia solution added, the solution remains clear on standing.

[Pharm. Journ., 62, p. 251; from Ber. d. d. ph. Ges. 9, p. 38.]

New Remedies.

Alkaloidal Caseinates.—The "Chemische Fabrik Rhenania" of Aachen has taken out a patent upon the preparation of these soluble caseinates, in which to a solution of the alkaloid in alcohol casein is added with addition of an alkali; the solution is then evaporated to dryness at low temperature.

[Phar. Centrh. 40, p. 72.] *V. C.*

Antiarthrin, a proprietary pill which contains an extract prepared from the horse-chestnut with salicin, saligenin, hydrochloric acid and dextrin. Used presumably as an antiperiodic. [Phar. Centrh. 40, p. 121.] *V. C.*

Quinine-ureo-hydrochlorid has been recommended as being superior to all other quinine preparations as an anti-malarial in doses of 0.6 gm., in more aggravated cases a subcutaneous dose of 0.1 gm. is administered in addition. [Zimmer & Co.'s Bericht, Feb. '99.] *V. C.*

Ammonium Fluorid. NH_4Fl.—This has lately been recommended as a non-irritating agent for preventing abnormal fermentive changes from taking place in the digestive organs. The salt is readily tolerated and butyric, lactic and acetic fermentation is hindered; owing to this fact it finds application in cleansing the Soxhlet milk bottles.

[E. Merck's Bericht, Jan. '99.] *V. C.*

Tanocol.—A combination of tannin and gelatin introduced by the Actien-Gesellschaft für Anilinfabrikation in Berlin. This resembles tannigen and tannalbin in that it undergoes decomposition only in the intestinal tract. Tanocol forms a grayish, inodorous and tasteless powder, which is almost insoluble in water. Used as astringent in intestinal disturbances in doses of 0.5—1 gm. [Phar. Centrh., '99, p. 71.] *V. C.*

Eugenoform. Eugenol-carbinol-sodium.—This compound, formed by the action of formaldehyde on eugenol, constitutes colorless crystalline scales which melt at 160° C., and are readily soluble in water. Owing to the readiness with which this compound splits off formaldehyd, it has found application as a bactericide, being recommended as an intestinal antiseptic in treatment of cholera, typhus and other infections, catarrhal affections superinduced by micro-organisms. Eugenoform is given in doses of 0.5 to 1 gm. [Berichte von E. Merck, '99. *V. C.*

Sodium Persulphate ($Na_2S_2O_8$). — This salt, which possesses the advantages of ready solubility and lesser caustic action over the potassium compound, has been studied pharmaceutically by Friedlaender of Berlin. This investigator found that a 1 percent solution prevented putrefaction of an aqueous extract of fresh meat, and urine did not become turbid, a 0.1 percent solution stopped the further growth of the anthrax bacillus, while a 5 percent solution was sufficient to destroy cultures of all varieties of bacilli.

As antiseptic wash in treatment of foetid discharges, a 3 to 5 percent solution was found an equally efficaceous substitute for lysol, creosol, etc. Aqueous solutions of sodium persulphate can be kept indefinitely as long as they are not heated. [Therap. Monatsh. 13, p. 99.] *V. C.*

Hyrgol is the name given to the colloidal, water soluble mercury, by the Chem. Fabrik von Heyden. It is of a dark, almost black color, quite soluble

in cold water, insoluble in alcohol and ether. The commercial product, on being dissolved leaves a small amount of an insoluble residue. The aqueous solution is neutral and noncaustic in its action. It is of a dark color; in transmitted light it is transparent, in reflected light it is strongly fluorescent and, therefore, not transparent. From the aqueous solution the metal can be precipitated in an insoluble condition, by acids, bases also by salts of the heavy metals and the alkali earths. The alkali and ammonium salts of such acids as form soluble mercury salts throw down the metal from the aqueous solution as a fine white precipitate, which dissolves again in water, with a brown color. By the addition of albumen solution to the solution of hyrgol, the above mentioned precipitation is prevented, at least delayed. If reducable metal chlorides, for example, mercuric chloride are added to the solution of hyrgol they are reduced with the formation of calomel. If this reaction is carried out in dilute solution, a solution of calomel which is insoluble in its usual form results.

[Ph. Ztg. '98, p. 794; from Ber. Kl. Wschr., 1898, No. 42.] *I. W. Brandel.*

Practical Pharmacy.

Unguentum Hyrgoli is a soft ointment of a blackish color, which can be rubbed into the skin more easily than the ordinary gray salve. According to Werler, *Unguentum Hyrgoli* will never produce irrations of the skin or mercurial eczema. The 10 percent ointment is to be prefered. It is prepared by triturating 50 grams of hyrgol with about 25 grams of distilled water, and then rubbing it up thoroughly with 425 grams of any ointment base, mollin, or lanolin mixed with 20 percent of vaselin, or lard mixed with 10 percent of wax. The ointment can be prepared with the usual flavors e. g. benzoated lard.

[Pharm. Ztg., 1898, p. 794; from Ber. Kln. Wschr. 1898, No. 42.]
I. W. Brandel.

Spanish Silkworm Gut.—The business of manufacturing silkworm gut in Spain is a considerable industry. The method of preparation is thus described in the Journal of the Society of Arts: After the silkworm grub has eaten enough mulberry leaves, and before it begins to spin, which is during the months of May and June, it is thrown into vinegar for several hours. The insect is killed and the substance which the grub, if alive, would have spun into a cocoon is drawn out from the dead worm into a much thicker and shorter silken thread, in which operation considerable dexterity and experience are required. Two thick threads from each grub are placed for about four hours in clear cold water, after which they are put for ten or fifteen minutes in a solution of some caustic. This loosens a fine outer skin on the threads, which is removed by the hands, the workman holding the threads in his teeth.

The silk is then hung up to dry in a shady place, the sun rendering it brittle. In some parts of the country these silk guts are bleached with sulphur vapor, which makes them beatifully glossy and snowy-white, while those naturally dried have a yellowish tint. The quality of the gut is decided according to the healthy condition of the worm, round indicating a good quality and flat an inferior one. [Pop. Sc. Monthly, 54, p. 860.] *E. K.*

Syrnp of Althaea.—G. W. Haussmann discusses the various processes that have been suggested for the preparation of this very unsatisfactory galenical. The following process, he claims, yields a more stable product, than the present official process. Wash the althaea, 50 gm., with cold water, then macerate it with 400 cc. of water, previously mixed with 30 cc. of alcohol, during three hours, stirring frequently and strain without expression. Heat the infusion to boiling, add 10 gm. of purified talcum, and filter while hot, passing a sufficient quantity of boiling water through the filter to measure 400 cc. Add 750 gm. of sugar to the filtrate, heat to boiling, remove the scum and strain. When cold add a sufficient quantity of water to make the syrup measure 1000 cc. Keep the syrup in completely filled bottles, in a cool place. It is claimed by Hausmann that the above process yields a clear syrup, not as liable to fermentation as the official syrup of althaea.

[Am. Jour. Pharm. 71, p. 153.] *W. O. R.*

Syrup of Acacia.—F. W. Haussmann tried the substitution of powdered acacia for the lump acacia in the preparation of syrup of acacia in order to shorten the time required. The syrup prepared in this manner was very turbid and soon acquired a musty odor. Granulated gum acacia yielded much beeter results. The syrup prepared from this source was not as clear as that prepared by the official process.

[Am. Jour. Pharm. 71, p. 156.] *W. O. R.*

Physiology and Therapeutics.

Liquid Air as a Cautery.—According to the Tri-State Medical Journal and Practitioner for March, the use of liquid air as a cautery is already spoken of favorably. It having a temperature of 312° F. below zero, its action is, to all intents and purposes, the same as that of the most powerful actual cautery. It does not really burn, but utterly kills the tissues leaving a blister not unlike a burn. Hence it has been suggested for cauterization in surgical practice. It is not only a good deal cheaper than the ordinary cautery, but it is much more efficient, and its action can be absolutely controlled. Indeed, a well-known surgeon has already performed a difficult operation on a cancer case with liquid air, and he has reported the

case as cured." As long as lipuid air is not an article of commerce, "a good deal cheaper" is an attribute that may apply to the future.

[N. Y. Med. Journ. 69, p. 540.] *E. K.*

The Futility of Gargling.—Laryngologists have often called attention to the uselessness of gargles. Saenger has recently shown that they do not come in contact with the pharyngial mucous membrane and the tonsils. This he has done by brushing the tonsils with methylene blue and then making the person gargle with water, which was afterward ejected perfectly colorless. He also in another set of experiments, dusted the throat with flour and then had the person use a gargle containing iodine. The blue color resulting from the gargle appeared only on the soft palate and the tongue.

[N. Y. Med. Journ., 69, p. 498; from Muench. Med. Wochenschr.] *E. K.*

The Poisons given off by Paracitic Worms in Man and Animals.—G. H. F. Nuttall, of the Hygienic Institute of the University of Berlin, recently summarized the information on this interesting topic. The summary is brief and reproduced in full.

"Many of the symptoms affecting the human subject as well as animals who harbor parasitic worms have been attributed by certain authors to poisons which the latter develop within the body of their host. Peiper, of Greifswald, recently published an article in which he gathered together a good deal of evidence from scattered sources, evidence which very clearly proves that a number of worms do give off poisons.

In the case of the Ascari (familiarly called round or maw worms), which are found in man, the pig, the cat, and horse, the evidence is very striking. There are a number of cases recorded where children who suffered from convulsions, loss of consciousness, great loss of flesh, anæmia and other symptoms, were promptly and permanently cured of all of these by the use of medicines ("anthelmintics," vulgarly called "worm medicines"), which removed the parasites from the body. A number of authors have claimed that these parasites were simply injurious through their presence as foreign bodies within the intestine, as well as through their boring, their active movements and their robbing their host of his proper share of the food he had eaten. That these worms contain some poisonous substance was claimed by Miram, who whilst studying the *Ascaris megalocephala* suffered twice from attacks of sneezing, swelling of the eyelids and excessive secretion of tears, besides severe itching and swelling of the fingers which had been in contact with the worms. Von Linstow noted that when these worms were cut open they gave off a sharp, peppery odor and caused tears to flow from his eyes. Inadverently touching his eye with a finger which had been in contact with these worms, a very severe inflammation of the conjunctiva, with a condition known as chemosis, resulted. Raillet, Arthus and Chanson had similar ex-

periences. The latter two observers, working with an ascaris from the horse, suffered in addition from pain in the throat and loss of voice. These experimenters found that two cubic centimeters of the fluid taken from the inside of these worms would kill a rabbit.

Kolbe, of Reinez, after having read Peiper's publication above referred to, reported a remarkable case of a child he had unsuccessfully treated with the regular worm medicines. The boy had suffered for over a year from severe abdominal pains, frequent attacks of fainting and convulsions. The doctor having been unsuccessful, a friend of the boy's mother—a baker by trade—suggested that she should rub a dried roundworm with sugar, and make the boy take it. This "homœopathic" remedy had an immediate effect; two tangled masses of worms the size of a fist being given off by the patient, who made a prompt and complete recovery. Cobbold and Davaine have reported cases where various nervous symptoms had subsided on the removal of tapeworms. Marx saw an epilepsy of three year's standing cease on the removal of a *Tænia solium*. It is curious that the eyes are so frequently affected in those suffering from tapeworms. It is quite possible that this is due to the effects of a poison circulating in the blood, the same having been absorbed from the intestine where the parasite is domiciled. In five out of fourteen cases of patients harboring the tapeworm known as *Tænia nana*, Grassi observed serious symptoms resembling those of epilepsy.

Another worm, the Bothriocephalus, may cause severe anæmia, which has variously been explained as due to a peculiar poison, to effects resulting from the death of the worm, or to the length of time that the individual has harbored the parasite. A blood-sucking worm, the Anchylostoma, which may occur in hundreds and even thousands in the intestine, was believed by Lussana to contain a poison, and not to injure its host simply through the loss of blood it entailed. Looss, of Cairo, also states his belief, in a recent publication, that these parasites contain a poison. Working with the larvæ of this worm last summer, he found that even after carefully washing them, they caused dogs which had swallowed them to vomit, whereas the water in which the parasites had been washed had no effect on the dogs.

The *Tænia ecchinococcus*, a tapeworm which in one form of its parasitic life gives rise to the condition called "Hydatid cyst," also gives off a poison, for the fluid taken from the cyst has been shown to be toxic by Debove and Humphrey, who experimented on men and animals. This explains the severe symptoms and even death which may follow the puncture of a cyst by the surgeon, or its spontaneous rupture. There is also reason to belief that the Trichina and other parasitic worms give off poisons. At any rate, we have a fruitful field of investigation open to research along these lines, and there may be a good deal in the home remedy of the baker worm-specialist!"

[The Am. Naturalist, 33, p. 247.] *E. K.*

Literary.

Books and Pamphlets Received.

P. Blakiston's Son & Co.—Philadelphia. Victor von Richter's Organic Chemistry or Chemistry of the Carbon Compounds. Edited by Prof. R. Anschuetz, University of Bonn. Authorized translation by Edgar F. Smith, University of Pennsylvania. Third American from eigth German edition. Volume I: Chemistry of the aliphatic series. One vol., pp. XVIII, 625, with illustrations. 1899. $3.00.

Verlag von Gebrüder Bornträger—Berlin. Werden und Vergehen. Eine Entwickelungsgeschichte des Naturganzen in gemeinverständlicher Fassung. Von Carus Sterne. Vierte neubearbeitete Auflage, mit zahlreichen Abbildungen im Text, vielen Karten und Tafeln in Farbendruck, Holzschnitt etc. Heft 1 und 2. Vollständig in 20 Lief. zu je 1 M. od. in zwei Bänden à 10 M. Alle drei Wochen eine Lieferung. 1899.

Verlag von Wilhelm Engelmann—Leipzig. Lehrbuch der allgemeinen Chemie von Dr. Wilh. Ortwald, Professor an der Universität zu Leipzig. In zwei Bänden. Zweiten Bandes zweiter Theil. Verwandtschaftslehre. Vierte Lieferung, pp. 593 828, mit Figuren 71—152. Zweite umgearbeitete Auflage, 1899. M. 5.40.

R. Gaertner's Verlagsbuchhandlung—Berlin. Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Literatur. Herausgegeben von Dr. Emil Jacobsen. 37. Jahrgang, 1898. Zweites Halbjahr, erste Hälfte; pp. 355—496, mit in den Text gedruckten Illustrationen. 1899.

Lea Brothers & Co.—Philadelphia. Chemistry: general, medical and pharmaceutical, including the chemistry of the U. S. P. A. manual on the science of chemistry, and its applications in medicine and pharmacy. By John Attfield. Sixteenth edition. One vol., pp. 780. 1899. $2.50.

Lea Brothers & Co. — Philadelphia. A manual of organic materia medica, being a guide to materia medica of the vegetable and animal kingdoms for the use of students, druggists, pharmacists and physicians, by John M. Maisch. Seventh edidion. Revised by Dr. Henry C. C. Maisch, Professor in the Medico-Chirurgical College of Philadelphia. One vol., pp. 523, with two-hundred and eighty-five illustrations. 1899. $2.50.

Verlag von Erwin Naegele — Stuttgart. Aus meinem Leben. Erinnerungen und Rückblicke von Carl Vogt. Ein Bd., pp. VI, 202. 1896. Broch. M. 4.50; eleg. geb. M. 5.50.

Verlag von Karl Schmeil — Schneeberg. Zur Geschichte des ehemaligen Arznei-Laborantenwesens im westlichen Erzgebirge von Dr. Joh. Aug. Ernst Koehler. Brochure, pp. 55. M. 1.20.

The Scientific Press, Lt. — London. Poison romance and poison mysteries. By C. J. S. Thomson. One vol., pp. VIII, 255. 1899. 6 shilling.

Smithsonian Institution — Washington. Annual report of the Board of Regents, showing the operations, expenditures, and condition of the institution to July, 1897. One vol., pp. XLVII, 686. 1898.

Verlag von Julius Springer — Berlin. Hagers Handbuch der pharmaceutischen Praxis für Apotheker, Aerzte, Drogisten und Medicinalbeamte. Unter Mitwirkung von Max Arnold — Chemnitz, G. Christ — Berlin, K. Dieterich — Helfenberg, Ed. Gildemeister — Leipzig, P. Janzen — Perleberg, C. Scriba — Darmstadt, vollständig neu bearbeitet und herausgegeben von B. Fischer — Breslau und C. Hartwich — Zürich. Zweite Lieferung: *Acmella* bis *Am. molybdaenicum*, pp. 145—272, mit zahlreichen in den Text gedruckten Holzschnitten. 1899. Erscheint in höchstens 20 Lieferungen @ M. 2.00.

John Wiley & Sons — Mew York. The elements of physical chemistry. By Dr. J. S. R. Morgan, of the Dept. of Physical Chemistry, Columbia University. One vol., pp. VIII, 299. 1899. $2.00.

Author — Minneapolis. Contributions to the knowledge of seedlings by Francis Rameley. I. Seedlings of certain woody plants; II. Comparative anatomy of hypocotyl and epicotyl in woody plants. Accepted by the Faculty of the University of Minnesota as a thesis for the degree of Doctor of Philosophy. Brochure, pp. 68 with double plates.

Authors — Fargo, N. D. 1) An active principle in millet hay, by E. F. Ladd; 2) Comparison of methods for estimation of caffein, by E. F. Ladd; 3) Creatin and its separation, by E. F. Ladd and P. B. Bottenfield. Pamphlet, pp. 11. Reprinted from Am. Chem. Journ.

Author — Clarens-Montreux. La législation pharmaceutique en Suisse par L. Butin, avec la collaboration de C. Buehrer. Pamphlet, pp. 21. Reprinted from Journ. suisse de Chem. et Pharm.

Author—Ames, Iowa. The histology of caryopsis and endosperm of some grasses. By L. H. Pammel. Contributions from the Shaw School of Botany. No. 12. Pamphlet, pp. 27, with 3 plates. Reprinted from the Trans. Acad. Sci. of St. Louis. Vol. VIII, No. 11.

Agricultural Expt. St.*—Madison, Wis. Bulletins: No. 70, Construction of cheese curing rooms for maintaining temperatures of 58 to 68° F.; No. 71, Sugar beet investigations in Wisconsin during 1898; No. 72, Small fruits in 1898.

Author—Cincinnati. Fourth report on the Lloyd Mycological Museum for the year 1898. Leaflet, pp. 8.

Author—Cincinnati. "An investigation into Husa," an asserted plant preparation to cure the opium habit. By J. U. Lloyd. Pamphlet, pp. 10. Reprinted from the Eclectic Medical Gleaner.

Author—Cincinnati. Do physicians and pharmacists live on the misfortunes of humanity? An essay by J. U. Lloyd. Pamphlet, pp. 10. Reprinted from The Coming Age.

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* The bulletins and annual reports of this station are sent free to all residents of Wisconsin upon request.

Reviews.

TRUG-GOLD. Erzählung aus dem 17. Jahrhundert von Rudolf Baumbach. Miniatur-Ausgabe. Elfte Auflage. Ein Bd., pp. 384, mit acht Illustrationen von Ph. Grot Johann. Verlag von Albert Goldschmidt, Berlin. 1899.

Those who have read Baumbach's "Sommermärchen" or his "Frau Holde" are not in need of being told of the charming style, in both prose and verse, of this modern German writer. But neither this circumstance nor the fact that his songs are sung with the same enthusiasm by German pharmacy students as well as by others, would be sufficient justification for calling special attention to his works in a pharmaceutical journal. The justification lies in the fact that two of the principal characters of this story are apothecaries: the apothecary Daniel Thomasius, proprietor of the "Löwenapotheke", and his assistant, or "Subject" as he is called, the bachelor of arts, Fritz Hederich. The action takes place largely in the house of the apothecary, a former convent, and the adjoining garden in which not only flowers and vegetables, but medicinal plants also, are cultivated.

The writer does not intend to pose as literary critic and, therefore, will not even give the plot of the story. He ought, however, to be justified in presenting a brief outline of the professional characters. As an introduction, a description of the apothecary shop in Baumbach's own words seems most appropriate, especially since it will give those to whom Baumbach is still unknown at least a faint idea of the ease and charm of his description:

"In der Hauptstrasse der Stadt Finkenburg fiel ein stattliches Haus vor allen anderen Gebäuden in die Augen. Es war ganz massiv und mit steinernen Figuren reich geschmückt. Unter jedem Fenster befand sich ein Widderkopf und am Giebelfeld eine Gruppe von Ungeheuern, deren Schwänze gräulich untereinander verschlungen waren. Die beiden Enden der Dachrinne waren durch kupferne Delphine gebildet, die bei Regenwetter auf die Köpfe der arglos Vorübergehenden grosse Wasserstrahlen spieen. Eine breite, mit einem eisernen Geländer versehene Treppe führte zu einer gewölbten Thür, deren oberer Theil runde, in Blei gefasste Fensterscheiben hatte. Ueber derselben stand mit grossen Buchstaben geschrieben: 'Apotheke zum goldenen Löwen'; und wer das gelesen hatte, der konnte mit Zuhilfenahme eigener Phantasie in dem pudelartigen Thier, das in der Nische neben

dem Eingang stand, ein Konterfei des Wüstenkönigs erkennen; von Vergoldung war nichts mehr vorhanden.

Auf der breiten Freitreppe spazierte häufig, und namentlich wenn die Sonne schien, ein grosser Rabe würdevoll auf und nieder. Er hiess Jacob, war uralt und in der ganzen Stadt bekannt. Jacob versah eine Art von Wächteramt vor der Apotheke und hatte es namentlich auf die nackten Füsse der Finkenburger Gassenjungen abgesehen. Es gehörte zu den Lieblingsvergnügungen der Strassenjugend, dem Löwen neben der Thür eine Brotrinde oder einen Knochen in den Rachen zu stecken, oder auch demselben einen papierenen Hut aufzusetzen; aber so oft einer der Schlingel bei seinen Kameraden Derartiges in Vorschlag machte, pflegte man sich zuvor nach dem Raben umzusehen. Wehe dem Unglücklichen, den Jacob bei solch freventlichem Treiben ertappte; leise schlich er sich heran und versetzte dann dem Fuss des Arglosen einen so fürchterlichen Schnabelhieb, dass der Getroffene heulend und hinkend den Schauplatz seines verruchten Thuns verliess."

Of the interior of the apothecary shop proper there is next to no description and from a pharmaceutical standpoint it may be deplored that much more attention is bestowed upon the private alchemistic laboratory than on the pharmacy proper. It is true, Herr Thomasius is introduced to the reader while standing behind the prescription counter, but that is all. He is a well-appearing man in the fifties. He has inherited the "Apotheke" from his father after having traveled far and wide. He is not only wealthy, but is one of the most respected men of the city, being a member of the senate. In the course of the narrative he comes into contact with a "Wurzelgräber", a collector of drugs who sells the medicinal products of the native forests and meadows on the open market and also to the apothecary; also with a travelling quack whom the apothecary visits in order to purchase curiosities, such as an "Alraunmännlein", for he is an ardent collector as may be imagined from the description of the store. The comparison, as may be expected, is greatly to his favor. A physician does not enter into the narrative. The apothecary does not object to either the drug collecter or the foreign quack as interfering with his business, neither does he appear to have scruples, however, against practicing medicine himself. His daughter remarks on one occasion that people say that her father knows more than a dozen physicians. While in Vienna, he spent some time with a famous alchemist from whom he learned much but not his great secret. His spare time and

money he spends in trying to make the tincture by means of which to produce gold. He is not anxious for greater riches, but covets the honor of the discovery. After a number of unsuccessful experiments he is finally cured of his dreams. Hence the name of the story.

The second strictly pharmaceutical character is Fritz Hederich, A. B., who had almost completed his triennium at the university as a student of medicine, but who had to fly because he had been identified with two others in the attempt to conjure the devil, as the theological faculty claimed. He is picked up at the wayside by "Dr." Rapontico, the quack, who induces him to become his assistant. After a year of sickening experience he comes to Finkenburg and there prevents the apothecary from being cheated by the quack. The grateful apothecary takes the tired wanderer into his house and makes him his assistant, first in the shop and later in his private laboratory. While his preceptor covets the secret for the sake of fame, the younger adept covets it for the sake of the apothecary's only daughter, the fairest damsel in the town.

The plot of the story is an intricate one and ends happily, but is of no special pharmaceutical interest. Two otherwise insignificant incidents, between the lines of which, however, much can be read, are the following. At the house of the apothecary boards a teacher of the lyceum, a Magister Xylander, born Holzmann, who at first is not over anxious of the company of the new assistant. Having heard of his university studies, however, he changes front, becomes amiable and later finds him a worthy and appreciative companion. The principal character of the second incident is the son of an inkeeper, whose capacity for breaking glasses, and forgetfulness e. g. to turn off the faucet of the wine keg are serious shortcomings in the eyes of his father. The latter determines, therefore, that he is not to be his successor, but wants him to study. Through a peculiar circumstance Fritz Hederich becomes his tutor, but soon gives up in despair. Not long afterward he is accepted as apprentice in the apothecary shop where he seems to do fairly well.

It is not often that the apothecary fares so well in literature as he does in this story. The author is unquestionably in full sympathy with his characters and has understood well how to use them for literary purposes. Like most of the writings of this author, "Trug-Gold" has gone through numerous editions. Every pharmacist who reads German should be in possession of a copy. Nothing could be

more welcome as a present to assistants. It is just the kind of literature which the busy pharmacist is in need of in these days of business rivalry and competition. The eight half-tone illustrations assist the reader in transplanting himself back into the seventeenth century. The decorations on the cover, the frontispiece etc. are creditable to the publisher and in harmony with the contents.

E. K.

GRUNDZÜGE DER PFLANZENVERBREITUNG IN DEN KAUKASUSLÄNDERN, von der unteren Wolga über den Manytsch-Scheider bis zur Scheitelfläche Hocharmeniens. Von Dr. Gustav Radde, Direktor des Kaukasischen Museums in Tiplis. Ein Gross-Octav Band, 500 Seiten, mit 13 Textabbildungen, 7 Heliogravüren und 3 farbigen Karten. Verlag von Wilhelm Engelmann in Leipzig. 1899.

Nach dem Vorgange von Prof. Grisebach's "Vegetation der Erde" haben die Professoren Engler in Berlin und Drude in Dresden im Jahre 1896 die Herausgabe einer Reihe von Specialfloren verschiedener geographischer Pflanzengebiete der Erde begonnen. Deren Zweck ist durch derartige Beschreibung der Flora bestimmter grösserer Ländergebiete ein Gesammtbild der Vegetation der Erde zu gewinnen. Waren schon die beiden ersten Bände dieser Series, die Pflanzenwelt Spaniens und Portugals und der Balkanländer, von grossem Werthe und Interesse, so dürfte der soeben erschienene dritte Band jene umsomehr übertreffen, als derselbe das durch geographische und geologische Verhältnisse ungemein reichhaltige Florengebiet der Kaukasusländer behandelt. Der Band ist daher auch voluminöser und in illustrativer Ausstattung reicher bedacht.

Das Gebiet der Kaukasusländer liegt zwischen dem Schwarzen und Asowschen und dem Kaspischen Meere und den 39. und 46. Breitengraden. Dasselbe wird von den Parallelketten des bis zu 5000 Meter hohem grossen Kaukasus und dem südlicheren bis zu 4000 Meter hohem kleinen Kaukasus von Nordwest nach Südost durchzogen. Zwischen beiden liegt die fruchtbare von den Kura-, Jora- und Rion-Strömen durchzogene Niederung, während an die nördlichen Abdachungen des grossen Kaukasus bis weit über die Sumpfniederungen des Manytsch Stromes die weiten Steppen des süd-russischen Tauriens heranreichen. Die Kettengebirge des grossen Kaukasus fallen südwärts steil in die Niederung des Jora- und Kura-Stromes

herab. Obwohl nicht ganz so hoch wie jener, hat der südliche Kaukasus reiche Gletscher und ist Wasser- und Wiesenreicher. Die Schneegrenze des grossen Kaukasus liegt am nördlichen Abhange bei 3500 Meter, am südlichen Abhange bei 2900, bei dem kleinen Kaukasus am nördlichen Abhange bei 2700 Meter Höhe. Klima, Höhenlagen und geologische und hydrographische Mannigfaltigkeit verleihen diesem vielgegliederten, von der Steppe und warmen Thalgründen bis zum Hochplateau und alpinen Gletschern reichenden Gebiete eine ungemein reichhaltige und schöne Flora.

Der Verfasser des vorliegenden Buches hat die Kaukasusländer seit mehr als 30 Jahre für naturwissenschaftliche Erforschung bereist und dürfte wohl der gründlichste lebende Kenner derselben sein. Der Gewinn dieser Lebensarbeit ist in diesem Buche zur Anschauung gebracht. Dasselbe bekundet durchweg die Frische und Originalität eigner Naturbetrachtung und fesselt dadurch und durch lebendige Schilderung und ansprechende Diction das Interesse des Lesers in jeder Weise. Eine eingehendere Besprechung des Inhalts würde einerseits räumlich zu weit gehen, anderseits dem umfassenden Gegenstande unzulänglich gerecht werden. Genüge es daher den Hauptgehalt der einzelnen Kapitel in Kürze anzugeben. Einleitung: Geschichte und Literaten der botanischen Forschungen in den Kaukasusländern, S. 1—22. Cap. 1: Die Steppen der Kaukasusländer und ihre Formationen, S. 23—96. Cap. 2: Das Kolchische Gebiet und sein Anschluss an Taurien, S. 97—193. Cap. 3: Talysch, S. 194—207. Cap. 4: Die kaukasischen Wälder, S. 207—284. Cap. 5: Die Formation der xerofil-rupestren Pflanzen, S. 285—306. Cap. 6: Die Hochgebirgsflora der Kaukasusländer, S. 306—400. Cap. 7: Eintheilung des kaukasischen Florengebietes, S. 400—410. Cap. 8: Phänologische Entwicklung der Flora, S. 411—438. Zum Schlusse befindet sich eine Erläuterung der Abbildungen und ein 51 Seiten umfassendes alphabetisches Inhalts-Register und zwei treffliche farbige Karten der Kaukasusländer.

Die mit der lebendigen Frische von Reiseberichten entworfenen Schilderungen und Landschaftsbilder gewähren durchweg eine anschauliche und anmuthige Darstellung der topographischen und pflanzlichen Reichhaltigkeit von den einförmigen Steppen, den üppigen Wiesengründen der Bergabhänge bis zu den theils waldbedeckten, theils mit Gestrüpp bestandenen viel zerklüfteten Höhen der Kettengebirge der Kaukasus-Länder. Der um die botanische Kenntniss

Südrusslands verdiente Verfasser dieses Buches hat mit demselben als Facit vieljähriger Forschungen und Studien ein Werk geschaffen, dessen Lecture allen Natur- und Pflanzenfreunden in gleich hohem Maase Belehrung und Interesse gewährt.

Durch Inhalt und schöne Ausstattung des Buches, wie auch durch die wahrhaft künstlerisch ausgeführten Heliogravüre und Karten gereicht das Werk dem Verfasser und dem Verleger, sowie dem deutschen Büchermarkte zur Ehre. *Fr. Hoffmann.*

INORGANIC CHEMISTRY according to the periodic law. By F. P. Venable, University of North Carolina, and Jas. Lewis Howe, Washington and Lee University. One vol., pp. v, 266. The Chemical Publishing Co., Easton, Pa. 1898. $1.50.

Those who believe in the periodic system, not as a chemical dogma, but as an scientific expression, imperfect as it is, of no mean didactic value must welcome any attempt to present chemical facts in the light of this theory to beginners. The book before us is *a priori* all the more welcome because it emenates largely from the pen of the author of "The development of the periodic law" (see vol. 15, p. 17) who has shown himself a careful student of this system.

The authors' reason for writing this book was that the complete introduction of the periodic system into a text book had previously not been attempted. It is from this point of view, therefore, that the book should be judged. Anyone desirous of selecting an elementary text book will naturally want to take into consideration the general style of presentation of the subject, the selection of experiments, etc. Suffice it to state that the general style is so simple that scholars at highschools or academies should not fail to comprehend it, and that the experiments, on the whole, admirably emphasize the lessons to be taught without detracting the attention of the student by any complexity of detail either of manipulation or reaction.

After a general introduction, the elements are taken up, beginning with the seventh group, but omitting the "positive series" of groups seven, six and five. These are taken up at the very close, after the discussion of the three subgroups of group eight. In the discussion of the hydrids and halids the same general order is followed. The oxids and sulphids, however, are taken up in the inverse order,

beginning with group one. The nitrids, carbids, etc., occupy but little space.

What the writer misses in this presentation is the application of the principles of the periodic law to structural chemistry. The important physical as well as chemical lessons to be learned from the study of the halids, the hypohalites, halites, halates and perhalates e. g. as groups are almost entirely lost. Ever since the writer has been teaching chemistry he has taught it in accordance with the periodic system, or better possibly, with his interpretation of that system, and has found the line of reasoning merely indicated above as of inestimable value as a stimulus to thinking chemically. Inasmuch, however, as he has never taught beginners, many of his methods might not prove applicable to students for whom this book is intended. As an advocate of the didactic value of the periodic system he warmly welcomes every rational attempt to introduce it at the earliest possible moment into every course of chemistry.

E. K.

DIE HEILPFLANZEN DER VERSCHIEDENEN VÖLKER UND ZEITEN, IHRE ANWENDUNG, WESENTLICHEN BESTANDTHEILE UND GESCHICHTE. Ein Handbuch für Aerzte, Apotheker, Botaniker und Drogisten. Von Dr. Georg Dragendorff, Prof. emer. Verlag von Ferdinand Enke in Stuttgart. 1898.

After having established a prominent reputation as a professor and author in the domain of pharmaceutical and toxicological chemistry Prof. Dragendorff after his retirement from the chair at the university of Dorpat has devoted his spare years to the elaboration of this encyclopædical work. His aim evidently was in accordance with the title of the book to furnish a synoptical record of all plants ever used for medication with additional information as to their botanical origin, habitat, essential constituents, uses and history. As a culmination of his life-work this task was certainly a high-minded, but no less an inordinate one requiring an immense amount of literary and critical research and labor and much more time than was left to the studious author.

Voluminous and well-planned as the book appears to be, it can be considered but a comprehensive and integral skeleton whereupon succeeding authors may erect a more elaborate and complete superstructure. In its present fragmentary form the book fails, even in

the use of older and much used plants, to render sufficient information for any more definite and explicit inquiry. By a most comprehensive alphabetical index embracing nearly 200 double-column pages the book offers at least a fairly complete list of the names, the habitat and mostly also of the uses of the plants employed for medication. The make-up of the voluminous work is an excellent one in every respect. *Fred. Hoffmann.*

KURZES REPETITORIUM DER ORGANISCHEN CHEMIE. Speciell für das Bedürfniss des Mediziners und Pharmazeuten bearbeitet. Zweite, vielfach erweiterte Auflage. Ein Bd,, pp. 227. B. Schmid'sche Verlagsbuchhandlung, Augsburg. 1899. M. 2.00.

This brief repertory of organic chemistry contains only such material as is thought essential to the medical or pharmaceutical candidate preparing for an examination in this subject. The pages are small octavo and only one-half of them are covered with text, the other half being left blank for notes. In some instances, e. g. fermentation, an attempt has been made to include some of the latest work, viz. that of Buchner, whereas e. g. in the brief chapter on terpenes no such attempt seems to have been made. So long as students are compelled to cram for examinations, books of this nature will be written and will be found useful. If such repertories, even one as brief as this one, could be substituted for our vicious quiz-compends, board examinations in this country would be better than they are at present. *E. K.*

DIGEST OF CRITICISM ON THE UNITED STATES PHARMACOPŒIA, seventh decennial revision (1890). Published by the Committee of Revision and Publication of the Pharmacopœia of the United States of America (1890—1900). Part II. Comprising abstracts of papers up to December 31, 1897.

This compilation by Mr. Wilder is possibly the most striking outward manifestation of the continued activity of the Committee of Revision. It has not only been received favorably at home, but has commanded the admiration of Europeans for the American way of doing things. It should certainly bring out the cooperation of all as requested by the chairman of the Committee and the compiler of the digest. *E. K.*

SUPPLEMENT.

Universities and Colleges.

Dr. Kunz-Krause of Lausanne has been appointed successor to Professor Geissler at Dresden.

Dr. R. F. Weinland is Privatdocent for pharmaceutical chemistry at the University at Munich. In his "Habilitationsschrift" he discussed the subject: On the replacement of oxygen, resp. hydroxylgroups, by fluorine in the alkali salts of several metalloid- and metallic acids.

The New York College of Pharmacy has recently received from its President, Mr. Kemp, physical apparatus amounting to the sum of $500.00; among them a fine Roentgen ray apparatus. The Alumni Association has supplemented the gift by having a large show case built at the cost of nearly $200.00 in which to store the new apparatus.

"It seems somewhat odd," writes the Paris correspondent of the *C. & D.*, "that a mixed faculty like Lille, where all the professors are M. D.'s and few are pharmacists, should have practically decided to grant the degree of 'Doctor in Pharmacy' so strongly criticized by the medical profession. But the explanation is probably to be found in the fact that the Paris School of Pharmacy, as well as several of the leading provincial faculties, such as Lyons, Bordeaux and Montpellier, having decided to grant the degree, Lille must necessarily follow suit, otherwise the pharmacy students will simply go elsewhere to take their pharmacien-doctor's diploma."

Professor D. T. MacDougal of the Botanical Department of the University of Minnesota has been appointed Director of the laboratories of the New York Botanical Garden. He will take up his duties July 1, at which time—according to the Bot. Gaz.—the new museum and laboratory building of the Garden will be ready for occupancy. The laboratories in question will be devoted entirely to research work. No student will be received until an adequate laboratory equipment has been secured and put in place, a matter which will occupy the director's attention for a few months.

Scientific Societies.

The Chemical Section of the Paris Academy of Sciences has elected Mendeléeff a corresponding member in place of Kekulé.

During his discourse on transparency and opacity, Lord Rayleigh at the Royal Institution is reported to have "facetiously apologized to the chairman for giving measurements in the metric system, as he had become so accustomed to use it during his researches that it was difficult to shake off the habit."

At the March meeting of the British Chemical Society, Prof. Dewar announced that he had succeeded in preparing ¼ litre of hydrogen which he used for the determination of some of the physical constants of this liquid element. With his old electrical resistance thermometer he found the boiling point to be —238°, with a

new one made of platinum containing 10 p. c. rhodium he found it to be —246° or 27° absolute, which, he says agrees well with the theoretical number and may be taken as correct.

The value of the general prizes of the Am. Pharm. Ass'n. were reduced to $50, $30, and $20 at the Baltimore meeting last summer. At the same time a Maisch Prize of $50 for valuable work in pharmacognosy and a Hager Prize of $50 for meritorious work in pharmacy were established. The committee consisting of Prof. Schlotterbeck, Ann Arbor, Prof. Hemm, St. Louis, and Mr. Morrison, Montreal, have, according to Merck's Report, made the following awards: First prize: On certain alkaloidal periodides, by A. B. Prescott and H. M. Gordin; second prize: Standards for black and white mustard seed, by J. U. Lloyd; third prize: The standardization of volumetric acid and alkali, by W. A. Puckner. No award was made of the Hager Memorial Prize. The John M. Maisch Prize was awarded H. Kraemer for his paper on Qualitative examination of powdered drugs. This is the third consecutive year that Professor Prescott has received prizes from the association.

American Pharmaceutical Association.— The following circular letter has been received from the Chairman of the Section on Education and Legislation:

"The meeting at Put-in-Bay promises to be one of unusual importance as regards the work of the Section on Education and Legislation. The way has been cleared by the efficient work done in the past for the intelligent framing of a model pharmacy law. It is hoped that every member of the Association will study carefully the reports of past meetings bearing on this important question, that they will familiarize themselves especially with the details of fact contained in the report presented at the Baltimore meeting, and come to Put-in-Bay with very definite ideas about each important feature of a model Pharmacy law.

Whi'e the Association may find that it is not yet ready to take final action, it should be possible, by concentrating thought and effort in this direction, to make a good beginning in the constructive work for which such abundance of material has been accumulated.

Another important subject which should receive especial attention at the coming meeting is that of the toleration by the medical and pharmaceutical professions of nostrums offered either without formulas or with false formulas. Sustained by the potent influence of the large advertising patronage involved, the evil has grown until it threatens the very existence of scientific pharmacology. Can nothing be done to check it? Action must be prompt to be effective. Any suggestion of a practical remedy will be timely. Send in your contribution to this symposium.

All papers, whether on the above or other subjects pertinent to the work of the Section, should be in the hands of the Committee by August 15th, in order that they may be printed before the coming meeting. Let each paper be accompanied with a brief abstract of its contents, if possible."

All papers and communications are to be addressed to the Chairman of the committee, Dr. A. B. Lyons, 72 Brainard St., Detroit, Mich.

Calendar of Association Meetings for May.*

State.	Date.	Place.	Secretary.
Alabama	16	Birmingham	P. C. Candidus, Mobile.
Arkansas	9	Hot Springs	B. Bond, Jr., Little Rock.
California	16	San Francisco	J. H. Dawson, San Francisco.
Delaware	4	Wilmington	F. W. Fenn, Wilmington.
Florida	18	Pensacola	W. H. Bradbury, Pensacola.
Indian Territory	17	Vinita	E. P. White, Caremore.
Kansas	14	Lawrence	F. A. Snow, Topeka.
Louisiana	9	New Orleans	J. A. Legendre, New Orleans.
New Jersey	—	Atlantic City	F. C. Stutzlen, Elizabeth.
North Carolina	—	Durham	H. R. Horne, Fayettville.
Texas	—	Waco	R. H. Walker, Gonzales.

* According to Merck's Report.

Professional.

The following editorial taken from Medicine shows plainly that druggists are not the only ones who are betrayed from the path of professional ethics by commercial motives. "The practise of some physicians in turning over patients to a specialist and exacting a fee from them for so doing has, we think, become increasingly common. In a city not a thousand miles from the editorial office of Medicine we know it to be a common practise for certain specialists to devide the fees derived from patients with the practitioner who sends the case. How common the practise is we are unable to say, but we know that it is openly discussed in gatherings of medical men. It is especially stated that the practise is very common among our surgical *confrères*. It is claimed that even those who devote special attention to internal medicine are not averse to now and then dividing up a plethoric consultation fee.

Two prominent eastern journals have discussed the matter, but they do not seem to have found anything very iniquitous in the practise, though they admit that there may be some difficulty in adjusting a proper division of the spoils and thus friction may be created between the practitioner and the specialist. The practise has found a defender in Melville Black, of Denver, who argues in the Colorado Medical Journal in favor of the payment of a fee by a specialist for referring a patient. C. L. Greene, of St. Paul, in a letter to the New York Medical Journal, strongly condemns this proposition, as he says the fee must be given secretly, and the patient, if he knew of the transaction, would feel little confidence in 'the specialist who purchased him, and would have lost all regard for the family physician who sold him.'

The Northwestern Lancet in commenting upon this subject says: 'There is more of this buying and selling of patients going on secretly than is generally known. In more than one direction in this neighborhood have offers been made by specialists to hand back to the general practitioner a percentage of the fee from cases referred for operation.'

The very comments that have been made upon this proposition are sufficient to show that the practise is

by no means rare. In the city which we have stated was not far from the editorial sanctum, we have known of cases in which practitioners have gone to several surgeons to learn where the largest division of the fee could be obtained. Undoubtedly these were extreme instances; that the practise is very common even in its milder form we do not believe.

There can be no question that this practise is to be condemned. Nothing that is fair, just or equitable can be found in such an arrangement. The writer of this editorial upon one occasion was betrayed into a transaction of this kind. It was done hurriedly and without thought of the equities of the case. Since then he has not been, and he thinks for all time to come he will never be, betrayed into a similar arrangement.

No one who watches the tendencies of professional life can fail to see that commercialism is rapidly spreading in the ranks of the profession. Whether this tendency is good or bad we shall not now attempt to say, but the practise of selling patients is one which would be condemned by even the most rudimentary system of business ethics."

Bibliography.

Early chapters in science by Mrs. Awary are soon to be published by E. P. Dutton & Co.

Number 26 of the Pharmaceutische Zeitung issued on April 1, contains an interesting article on "Der erste April in der Apotheke" by Hugo Maubach, author of "Das Charakterbild des Apothekers in der Litteratur (see vol. 16, p. 40.)

The April 1, number of the Chemist and Druggist is the 1001. The previous number being marked the 988 this journal came very near fooling itself, but in a lucky moment discovered that "somewhere in the days of our youth" a miscalculation involving an error of twelve numbers was made. The event is celebrated by the publication of a facsimile page of the first number.

The April number of the Journal of the American Chemical Society contains an excellent heliotype of Charles E. Munroe, the present President of the association.

Since the beginning of this year Die Therapie der Gegenwart, published by Urban und Schwarzenberg, Vienna, has changed its form and increased its contents. The latter are no longer exclusively made up of abstracts, but contain original articles as well.

The second set of C. G. Lloyd's photographs illustrating fourteen plants will be sent to any applicant on the receipt of $1.00. These photographs of fungi are evidently meeting with much favor.

The rumor that Professor Virgil Coblentz might take the place of the late Professor Trimble in the editing of future editions of Sadtler and Trimble's work on chemistry has been verified.

The following titles are taken from Brockhaus' Monthly list of new books for March:

1. O. Hansen: Text book of materia medica and therapeutics of rare homeopathic remedies. London, 1899. 8°. 122 pp. 4 sh.

2. C. Kratz: Pflanzenheilverfahren. Geschichte der Kräuterkenner. Historische und bibliographische Studien über den Gebrauch der Heilkräuter und der Kräuterkuren mit

vielen Recepten der früheren Kräuterheilkunde, Kräuterspecialitäten, alten und neuen Geheimmitteln nebst Litteraturangaben. Berlin, 1899. 8°, VIII, 291 pp. M. 3.

3. G. Leibold: Die Morphium-Krankheit. (Sogenannte Morphiumsucht, Morphinismus chronicus) und verwandte Zustände: Cocainismus, Morphino-Cocainismus, deren Entstehung, Verlauf und sichere Heilung ohne Qualen und Zwang. Eine kritische Studie, nach modernen Anschauungen und neuen Erfahrungen für Laien und Aerzte bearbeitet. Berlin, 1899. 8°, III, 74 pp. M. 2.50.

4. A. T. de Rochebrune: Toxicologie africaine, Tom I, 4—5 & Tom II, 1. Paris, 1889. á 5 fr.

Gebrüder Borntraeger announce the second, revised edition of Engler's Syllabus der Pflanzenfamilien, a synopsis of the entire plant system with special reference to medicinal and otherwise useful plants.

John Wiley & Sons have issued prospectuses of the following new works: 1. Examination of water (chemical and bacteriological) by Wm. P. Mason, Professor of Chemistry, Rensellaer Polytechnic Institute; 2. Electrolysis and electrosynthesis of organic compounds, by Dr. W. Loeb, authorized translation from the authors' enlarged and revised edition, by Dr. H. W. F. Lorenz; 3. The elements of physical chemistry, by Dr. J. S. R. Morgan of the Dept. of Physical Chemistry, Columbia University; 4. The microscopy of drinking-water, by G. C. Whipple, Bacteriologist and Director of Mt. Prospect Laboratory, Brooklyn.

From the list of new books to be published by the Macmillan Company during the coming spring the following may be mentioned: The spirit of organic chemistry by Dr. A. Lachmann, Professor of Chemistry in the University of Oregon, with an introduction by Dr. Paul C. Freer, Professor of General Chemistry in the University of Michigan, which is to serve as an introduction to the current literature of the subject; 2) A history of physics, by Dr. F. Cajori, Professor of Physics in Colorado College, a brief popular treatise which gives in broad outline the development of the science of physics from antiquity to the present time.

Messrs. Harper & Brothers announce the publication of the first numbers of Harper's Scientific Memoirs, a series of hand-books in science, under the general editorship of Joseph S. Ames, Ph. D., Professor of Physics in Johns Hopkins University.

This series will embrace a large number of translations and reprints of the most important articles which have been written in the history of science, including many which have an important bearing upon the present state of science. The fields of physics, astronomy, chemistry, and probably other sciences will be covered.

This series will lay before the general reader the original statements of many of the more important theories and experiments—basic scientific theories and experiments — which until now have not been readily accessible. A particularly interesting feature of the series will be the translation of papers of exceptional value which have appeared from time to

time in foreign scientific journals, and which have not before been reproduced in the English language.

It is proposed to print these papers with accompanying figures in thin octavo volumes, which shall be convenient for reference and yet inexpensive. Each volume will contain a complete memoir, or possibly, in certain cases, a collection of shorter papers, all on the same subject. The volumes will be printed in the English language, special attention being given to the translation or reproduction. Notes, explanations and corrections will be added where needed, and references will be given from time to time to contemporary or later work. A bibliography and index will close each volume.

The following are some of the recent government publications:—

Contributions from the U. S. National Herbarium, Vol. III. Reports on collections, revisions of groups, and miscellaneous papers. Revisions of the North American Graminæ and Cactaceæ, studies of special groups, and catalogues of plants collected in Nebraska, Idaho, South Dakota, Kansas, Wyoming, Alaska, and Mexico, with geographic reports and description of new genera and species. Pp. 612, pls. 28. Price $1.15. Reprint.

Experiments with Sugar Beets in 1897. By Dr. H. W. Wiley, Chemist of the United States Department of Agriculture. Pp. 165, pls. 2, figs. 2. (Bulletin No. 52, Division of Chemistry.) Revised edition. Price 20 cents.

A Descriptive Catalogue of Useful Fiber Plants of the World, including the Structural and Economic Classification of Fibers. By Chas. Richards Dodge, Special Agent. Pp. 361, pls. 12, figs. 103. (Report No. 9, Office of Fiber Investigations.) Reprint. Price 30 cents.

The Timber Pines of the Southern United States. By Charles Mohr, Ph. D. Together with a Discussion of the Structure of Their Wood. By Filibert Roth. Prepared under the direction of B. E. Fernow, Chief of Division of Forestry. (Bulletin No. 13, Division of Forestry.) Revised edition. Reprint. Price 35 cents.

Catalogues Received:—

F. A. Brockhaus—Leipzig. Monthly list of new books. March, 1899.

Felix L. Dames—Berlin. Bibliotheka Mariano de la Paz Graells: VI, Botanik.

The Macmillan Company—New York. Book Reviews, April, 1899.

B. G. Teubner—Leipzig. Mittheilungen. 32. Jahrgang, No. 1.

U. S. Dept. of Agr.—Washington. Monthly list of publications. March, 1899.

Commercial.

Cultivation of Medicinal Plants.—The following extract is taken from a paper on Pharmacognosy by Prof. J. O. Schlotterbeck in The New Idea:

"Without a knowledge of the first principles of physical and plant geography the introduction and cultivation of plants in other regions than in their native haunts could not be intelligently pursued. We must know the causes, source and direction of the trade winds, and the effect of the ocean currents on the climate of countries whose borders they lave, if we are to understand why the vanilla plant, which is a native of Mexico at 20 degrees N. lat., flour-

ishes equally well in Reunion and Mauritius at 20 degrees S. lat. Of course, anyone would naturally say the climate in both regions must be practically the same. True, but why is it that the rainfall of the islands east of Madagascar is practically the same as that of Vera Cruz? The peculiar combination of cold and moisture which is so conducive to the hearty growth of cinchona forests on the eastern slopes of the South American Cordilleras is brought about by the equatorial winds which coming from the great African desert, become laden with moisture, and being interrupted by the cool peaks of the Andes, deposit it as fog and rain on the eastern side. Thus, at one stroke it is also explained why the western slopes are dry and unfit for cinchona plantations. In tropical Asia a similar state of physical phenomena exists, but here we have to do with the alternating Monsoon winds and the Himalayas, for example. Continuing study on this line, there is no longer mystery in the fact that practically the same conditions of climate which exist between 19 degrees S. lat. to 10 degrees N. lat. in South America exist also in the highlands of Ceylon at 7 degrees N. lat., the Neilgherry Hills at 11 degrees N. lat. and the southern slopes of the Himalayas at 27 degrees N. lat. The annual rainfall in the native cinchona forests of South America reaches the enormous amount of twenty feet. Now, in British Sikhim, famous for the part it has taken in the history of cinchona cultivation, there is an annual rainfall of about thirty feet. In the Dutch cinchona plantations a rainfall of fully twenty feet is often recorded.

While a treatise comparing the climatology of the globe with the distribution of useful plants has not yet appeared, the persistent experiments in plant culture made by European colonists, and especially the Dutch, must eventually lead to such an end. The subject of the plant and its environment is one being continually investigated, especially in a number of experiment stations, as for example in Trinidad, Singapore, Buitenzorg and Calcutta.

We see in Florida and California a counterpart of the completely isolated and individualized Mediterranean Basin. The olive of Italy flourishes equally well in California, and it is from this region that America hopes eventually to obtain all her really pure oil.

The orange, lemon and fig have been introduced in California and Florida to such an extent that this fruit culture forms one of the largest of the commercial industries of the south. There is not a particle of doubt but that many other plants of tropical Europe and Asia would fare splendidly in tropical America, providing the labor problem were in a condition that would warrant the undertaking.

The route by which drugs reach the great avenues of commerce is certainly very interesting and instructive. We know, for example, that the Russian rhubarb was not grown in Russia at all, but received the name because it was sent from lake Kuku-Nor in northeast Thibet, the heart of rhubarb culture, across the Russian border, where it was rigidly inspected and then forwarded to St. Petersburg. This route was employed becouse the coast could be reached earlier than by way of Chinese ports.

There are many drugs whose variety names are derived from the region where grown or collected, and still others are derived from the name of the port from which they were originally or are now exported. To mention a few examples, the Iceland moss derives its name from Iceland, where the lichen grows in abundance, but where there is no commerce in the drug. Peruvian balsam was never made in Peru, but it obtained its name from the fact that the balsam, which is obtained from San Salvador mainly originally reached Europe via the Peruvian ports. Another similar example is the Venice turpentine, which is obtained from the Larix europea by making bore holes into the trunk of the tree, plugging for a period of rest, and collecting the accumulated oleoresin. Quantities of this turpentine are collected near Bozen in Tirol, and were in early times shipped via Venice to all ports of the globe. Venice never produced any balsam, and at this day probably has no more than a half dozen trees, if any at all. This, however, leads to the historical side of our subject."

Portland Cement.—The following facts are taken from an address (Pop. Science Monthly for April 1899) delivered before the Franklin Institute by Robert W. Lesley: "It was not until the end of the last century that the true principles of hydraulic cement were discovered by Smeaton, who, in the construction of the Eddystone Lighthouse, made a number of experiments with the English limestones and laid down, as a result, the principle that a limestone yielding from fifteen to twenty-five percent of residue when dissolved in hydrochloric acid will set under water. These limestones he denominated hydraulic limestones, and from the principle so laid down by him come the two great definitions of what we now know as cement, namely, the natural and artificial cements of commerce. The natural variety, such as the Rosendale, Lehigh and Cumberland cements, was first made by Joseph Parker in 1796, who discovered what he called 'Roman cement,' based upon the calcination at low temperatures of the nodules found in the septaria geological formation in England. This was practically the first cement of commerce, and gave excellent results. Joseph Aspdin, a bricklayer or plasterer, took out a patent in England in 1824 on a high-grade artificial cement, and, at great personal deprivation, succeeded in manufacturing it on a commercial scale by combining English chalks with clay from the river beds, drying the mixed paste, and after calcining at high heat the material thus produced, grinding it to powder. This cement, which was the first Portland cement in the market, obtained its name from its resemblance when it became stone to the celebrated Portland stone, one of the leading building materials in England. The rocks used in the manufacture of Portland cement are very similar to those from which natural cement is made. The various layers in the natural rock may vary in size or stratification, so that the lime, alumina and silica may not be in position to combine under heat, or there may be too much of one ingredient, or not enough of the others in close proximity to each other. In making Portland cement these rocks, properly proportioned, are accordingly ground to an

impalpable powder, the natural rock being broken down and the laminæ distributed in many small grains. This powder is then mixed with water and is made into a new stone in the shape of the brick, or block, in which all the small grains formerly composing the laminæ of the original rock are distributed and brought into a close mechanical juxtaposition to each other. The new rock thus made is put into kilns with layers of coke, and is then calcined at temperatures from 1,600° to 1,800°. The clinker, as it comes from the kiln, is then crushed and ground to an impalpable powder, which is the Portland cement of commerce. Portland cement may be made from other materials, such as chalk and clay, limestone and clay, cement rock and limestone, and marls and clays. In every case the principle is the same, the breaking down and the redistributing of the materials so that the fine particles may be in mechanical union when subjected to the heat of the kiln."

Not long ago Prussia prohibited the sale of **factory made tablets.** Whereas the German apothecaries seem to be divided as to the justice and rationality of this order, physicians are very outspoken in their condemnation. A Berlin physician ordered tablets to be made in the shops of two of the most prominent apothecaries favoring the government action. It not only took a long time to prepare them, but, it is claimed, the tablets were unequal in size, broken and the analysis by a court chemist yielded varying results. The contest will be watched with interest not only by the European physician and manufacturer, but also by thinking persons on this side of the Atlantic.

The Lloyd steamship "Darmstadt" which left Wilhelmhafen early in March carried 80 cases of goods for the complete equipment of an **apothecary shop at Tsintan.** The shop, equipped according to the Ph. G. is to be in charge of a marine apothecary. With it is to be connected a bacteriological section which is to be in charge of a marine physician whereas the chemical section will be in charge of the apothecary. Both are to be housed in the provincial (Kiautschou) hospital and under general control of the provincial physician. The apothecary is said to be a good botanist as well, so that the publication of a flora of Tsintan may soon be expected. Although the pharmacy is intended primarily for the benefit of the navy, it is to be open also to the general public. Thus it will be seen that pharmacy is also to have its share in the civilization of oriental China.

PRICE-LISTS RECEIVED:—

Eimer & Amend—New York. Price list of Kehlbaum's rare chemicals.

Fritzsche Bros.—New York. Wholesale price list. March, 1899.

Parke, Davis & Co. — Detroit. Price list, 1899.

Roessler & Hasslacher Chem. Co.—New York. Price list, March, 1899.

Sachse & Co.—Leipzig. Wholesale price list.

Zimmer & Co. — Frankfurt a. M. Export price list, 1899.

REPORTS RECEIVED:—

H. Haensel—Pirna a. Elbe. 1. Berichte über das Jahr 1898. One vol., pp. 124. 2. Reports on essential oils, 1808. One vol., pp. 90.

V. Koechl & Co.—New York. The modern therapeutics of the medicinal products of the Farbwerke vorm: Meister, Lucius & Bruening. One vol., pp. 143.

Naftalan Gesellschaft—Magdeburg. Beobachtungen über die Wirkung des Naftalan. III. Heft, pp. 104.

Parke, Davis & Co.—Detroit. A conclusive proof of the efficacy of vaccination. Pamphlet, pp. 14. Reprinted from the Phila. Med. Journ.

Schering & Glatz—New York. 1. Weitere Urtheile über den therapeutischen Werth von Urotropin, ein neues Desinficiens des Urins. Pamphlet, pp. 28; 2. Urotropin in der Kinderpraxis, von Dr. O. Huebner. Leaflet, pp. 5. Reprinted from Therapie d. Gegenwart.

The following report taken from the Ph. Ztg., of **German corporations** engaged in the manufacture of chemicals ought to be as interesting to Americans as they are to Germans. A—indicates that no dividends were declared; a ? that the percentage was not ascertainable.

Name of Corporation.	Founded.	Principal (in Marks).	Dividends for 1897. p. c.
Akt.-Ges. für chem. Industrie in Mannheim	1886	2,000,000	7
Akt.-Ges. für chem. Industrie in Schalke i. W.	1872	1,602,000	—
Akt.-Ges. für pharmacent. Bedarfsartikel vorm. Wenderoth in Cassel	1896	1,300,000	7
Ascania, chem. Fabrik in Leopoldshal	1871	276,000	7.5
Badische Anilin- u. Sodafabrik in Mannheim-Ludwigshafen	1872	18,000,000	24
Bremer chem. Fabrik Hude	1890	500,000	8
Chem. Fabrik auf Aktien vorm. Schering in Berlin	1871	4,500,000	7.5
Chem. Fabrik Billwärder vorm. Heil & Sthamer	1889	2,500,000	4
Chem. Fabrik Gernsheim a. Rh	1881	900,000	—
Chem. Fabrik Griesheim in Frankfurt a. M	1856	9,000,000	16
Chem. Fabrik Grünau, Landshoff & Meyer in Grünau	1898	2,000,000	?
Chem. Fabrik Helfenberg vorm. Eug. Dieterich in Helfenberg	1898	800,000	8
Chem. Fabrik Heinrichshall	1871	780,000	6
Chem. Fabrik Oranienburg	1871	1,440,000	9
Chem. Fabrik Rhenania in Aachen	1854	6,000,000	?
Chem. Fabriken vorm. Weiler ter Meer in Uerdingen	1889	3,000,000	15
Chem. Werke vorm. Dr. Heinr. Byk in Berlin	1896	2,000,000	8½
Fabr. chem. u. pharm. Präparate vorm. Asche & Co. in Hamburg	1890	310,000	?
Farbenfabriken vorm. Friedrich Bayer & Co. in Elberfeld	1881	12,000,000	18
Farbwerke vorm. Meister Lucius & Brüning in Höchst a. M.	1879	15,000,000	26
Hermania Akt.-Ges. in Schönebeck a. d. Elbe	1877	1,600,000	6
Medizin. Waarenhaus in Berlin	1894	185,000	—
Nienburger chemische Fabrik in Nienburg	1862	750,000	12⅓
Stassfurter chem. Fabrik vorm. Forster & Grüneberg	1871	3,000,000	10
Verein chemischer Fabriken in Mannheim	1854	4,000,000	8
Verein für chemische Industrie in Mainz	?	3,000,000	7
Vereinigte chemische Fabriken in Leopoldshall	1872	11,300,400	5

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Editorial.

Though few non-historians may be willing to assign to the study of history the amount of time apparently demanded for it in some of the courses of secondary education by the American Historical Association at its Cleveland meeting, there is little doubt in the minds of many thinking people that the subject of history has been neglected to such an extent that the other extreme would be welcomed rather than the continuance of past neglect. The study of history is not only important from a merely educational or cultural standpoint—though this would be in itself sufficient reason for urging the study—but there is also a more utilitarian standpoint which urges us to demand it. Though it may be claimed that history fails to teach because people will not learn, yet we have good reason to believe that many things would be done more intelligently and therefore better if a good knowledge of history underlay our actions. This applies to pharmacists in a general way as it does to all citizens, it applies to them more particularly, however, as a class of public servants who thus far have been permitted very largely to regulate their own calling. Whether they will be permitted in the future to do this, will to no small degree depend upon the wisdom of their past and present action.

That some knowledge of history in general is essential for an understanding of any particular chapter is self-evident. This general knowledge colleges of pharmacy may not be in position to impart, but they ought to demand it as one of the entrance requirements. Unfortunately none of the colleges and schools have the financial

support, the moral courage and, last but not least, the public sentiment necessary to demand the requisite preparation at present. But few demand a high-school preparation, some not even the preparation of the grammar schools. The public is still so ignorant about matters pertaining to health and disease that even the intelligent readily become the prey of quacks and charlatans. As a consequence the demands for higher pharmaceutical education made by some are not sufficiently supported by the sentiment even of the more intelligent public.

As already stated, pharmaceutical legislation has been very largely in the hands of the pharmacist. It was initiated by those pharmacists who had a desire to see the public better served and to that extent redounds to the credit of the American pharmacist. The results that were anticipated by most were not, however, realized. Some of those who were among the most sanguine at first are now in the position of Goethe's "Zauberlehrling" who deplores that he cannot rid himself of the spirits whose presence he has invoked. The early attempts naturally had to be more or less of the nature of experiments. Instead of improving upon the first attempts, except in minor matters, there resulted for a long time an inertia which has proven decidedly detrimental. New York and Maryland are to-day in a position with regard to pharmaceutical legislation in which e. g. Wisconsin was some twenty years ago. But even Wisconsin like other states has within recent years had the control of the practice of pharmacy taken in no small measure out of the hands of the Board of Pharmacy and placed into the hands of the Dairy and Food Commission. There can be but little doubt that the welfare of the public demanded this, but it is equally true that this might have been avoided had pharmacists themselves urged the passage of more stringent regulations which made them and not some one else responsible for their actions.

The American Pharmaceutical Association several years ago discussed matters of pharmaceutical education and is now giving its attention to legislation. In looking over the papers read during these years, one is surprised how few of them seem to be based on careful study of facts, past and present. Some, it is true, contain statistics, but these often appear distorted, because things are com-

pared which are not comparable. Others contain schemes that were written up on the train while travelling to the place of meeting or have been dictated to a stenographer at the hotel an hour or so before the meeting. So, at least, we were informed by the late editor of the American Journal of Pharmacy a few years ago, who, no doubt, had good reasons for making such a statement.

It certainly seems strange, when viewed in the light of history, that prominent members of the American Pharmaceutical Association should advocate and urge measures which have utterly failed in the most civilized countries of Europe, whereas they oppose measures that have proven most beneficial in those countries.

Besides being Europa-phobes to the extent that even the metric system is denounced as un-American, some of us have become so America-phile that suggestions to evolve something better out of our present state-law system rather than to continue the tinkering of the past quarter of a century, are regarded as treason. Things foreign are denounced, but we constantly permit ourselves to be ruled politically by foreigners in our own country.

The Chairman of the Section on Education and Legislation has recently issued a circular (see p. 232) in which he calls attention to the work which he desires to see accomplished at the Put-in-Bay meeting. The questions to which he invites attention are certainly among the most important, but we regret to have to differ when he states that "such abundance of material has been accumulated" for constructive work on the "model pharmacy law." Numerous papers have possibly been contributed and reports of individuals rather than of committees have been handed in and laid *ad acta*, at times without any discussion whatever on the subject matter contained therein. These papers and reports have, no doubt, contained valuable suggestions which were at times based on careful observation. They also frequently contained opinions and nothing more which seemed to reveal the total absence of study and thought. Thus e. g. schemes for the classification of drug stores have been presented in a utopian spirit evidently without any forethought and accepted in that same spirit without any afterthought. The Review has repeatedly pointed to the utter failure of such schemes in all civilized countries where it has been tried. Yet before the American Pharmaceutical Association is

asked to pass on this most fundamental problem in the construction of a model pharmacy law it ought to have better information pro and con than has thus far been supplied by both advocates and critics. No "model" law that the A. Ph. A. can devise will be either perfect or universally acceptable. We should, however, strive to do the best that can be done under the present circumstances. This will involve labor, indeed much labor on the part of those most deeply interested in and fitted for the work. Of this but little has been spent. While not hesitating to criticize charlatanism in this direction, the Review has gladly acknowledged from time to time the good work that has been done. Let this good work go on and let us give it all possible assistance. We have only begun our A. B. C. of pharmaceutical economy. Let us lay a respectable foundation rather than build castles in the air. The former will be of permanent value no matter what superstructure we ultimately build upon it. *E. K.*

The Assay of Opium: a supplementary Note.

By *H. M. Gordin* and *A. B. Prescott.*

Last year we reported[1] a morphiometric assay of opium, the chief features of which were:

1. Extraction of the drug by a special method of percolation to separate the morphine.

2. The volumetric estimation of the extracted morphine by standard iodine. In this method only one gramme of opium is taken.

As a result of our further work upon the assay of alkaloidal drugs, we desire to offer some additions to this process of opium assay, as follows:

1. A more desirable solvent for the extraction of the morphine.

2. An adaptation to the use of standard acid for those who prefer it, instead of iodine, in the volumetric determination of the morphine. This, however, makes it advisory that three grammes of opium be taken instead of one gramme.

Having additional experience we desire to make a new statement of the directions for the work, and to report some results.

[1] Pharm. Arch., 1, p. 121; A. Ph. A. Proc., 1898, p. 340; J. Am. Chem. Soc. 1898, p. 724.

The Materials and Utensils for the Assay.

Opium in very fine powder. Powdered sodium chloride such as is used for the table. An ethereo-ammoniacal mixture composed of stronger ammonia water (U. S. P.) and alcohol, of each 5 cc.; chloroform (U. S. P.) 10 cc.; and ether 20 cc. Benzol boiling at about 80° C. A mixture of one volume of absolute alcohol and five volumes of chloroform. Twentieth normal sulphuric acid and twentieth normal potassium hydrate solution. Neutral methyl orange paper. Standard solution of iodine, of any known strength in the neighborhood of one percent, and standard solution of sodium thiosulphate of about twentieth normal strength.

A 4 or 6 ounce screw-top ointment jar having a bottom concave within. A small pestle just long enough to rest half upright within the jar when it is closed. A small glass percolator provided with a stopcock and of the length of about 22 centimeters and inner diameter of about 1.3 centimeters.[2]

Directions for the Assay.

Weigh out three grammes of the opium into the ointment jar, rub it up by means of the pestle with a few cc. of the ethereo-ammoniacal mixture to make a fine paste, taking care not to smear the sides of the jar unnecessarily, then add about 2 cc. more of the same mixture, so as to have the opium well covered with liquid, screw down the top, leaving the pestle inside, and set the jar aside for five or six hours. After that time the jar is opened, about ten grammes of the sodium chloride thoroughly mixed in with the opium, and the open jar placed in a good current of air, stirring frequently with the pestle in order to prevent formation of lumps. In about an hour the powder will be nearly dry. The jar is then placed in a vacuum desiccator containing, besides sulphuric acid, a vessel of paraffin, and left there over night. The jar is then taken out, any lumps in the powder carefully crushed with the pestle, and the mixture transferred first to glazed paper and then to the percolator, in the bottom of which a plug of cotton has been placed. The jar is rubbed out several times with small quantities of the sodium chloride, the rinsings added to the percolator, and having placed a plug of cotton and a piece of glass on the top of the powder, the opium is extracted with benzol by percolating very slowly until, upon evaporating ten drops of the

[2] The lower part of a burette cut in two answers very well.

percolate on a watch glass and taking up the residue with ten or twelve drops of very slightly acidulated water, no turbidity appears by the addition of two drops of Wagner's reagent. After the narcotine, thebaine, codeine and most other alkaloids have in this way been completely removed by the benzol, the receiver is removed[3] and a shallow evaporating dish placed under the percolator. The percolation is now continued slowly with the mixture of alcohol and chloroform,[4] until ten drops of the percolate tested as above give no reaction for alkaloids. The evaporating dish is now put into a good current of air and left over night[5] or till the solvent has disappeared. The bottom of the dish will then be found to be covered with a good crop of crystals intermixed with a little resinous matter. Fifty cc. of the twentieth normal sulphuric acid are now carefully run out from a burette into the evaporating dish, the contents rubbed well with a pestle till everything is detached from the bottom and sides of the dish, and then, without filtering, poured into a tall narrow measuring cylinder. The dish is then carefully washed several times with small quantities of water, the washings added to the cylinder and the latter filled up to make 90 cc. After shaking well a few minutes, and setting aside till solid particles have settled down,[6] 75 cc., representing two and a half grammes of the opium, are filtered off into a beaker holding some 250 or 300 cc., about 50 cc. of water are added, and then 35 or 40 cc. of the twentieth normal potassium hydrate run out from a burette into the beaker. Twentieth normal sulphuric acid is now carefully added, one cc. at a time, stirring with a glass rod and testing the liquid after each addition by immersing for about fifteen seconds small strips of neutral methyl orange paper. As soon as the paper becomes reddish, one cc. of the potassium hydrate solution is added, and then again of the sulphuric acid adding now one tenth of a cc. of the latter at a time till the paper becomes reddish. In order to get exact results, the acid and alkali solutions should be standardized in nearly the same conditions under which the titration of morphine takes place, that is, using about 175 cc. of liquid, and noting the appearance of the reddish tint upon the test paper as the point of neutrality. The strips of reagent paper should

[3] The benzol can, of course, be recovered by distillation and used over and over again.

[4] See Burg, Ztschr. anal. Chem. 19, p. 222.

[5] This makes the whole assay occupy about two days and two hours, if it be started in the morning.

[6] The filtration is much accelerated if the waxy particles are prevented from entering the filter.

of course be marked with the wash bottle after immersion in the beaker. Though the solution of morphine has a yellow color from some extractive matter, so that the end reaction cannot be found by adding a liquid indicator to the solution, there is not the slightest difficulty in noting the appearance of the reddish tint upon the cream-colored methyl orange paper. Of course other indicators, like iodo-eosin in ethereal solution, etc., might be found to give equally good results, but having found the dip test with methyl orange paper to give sharp and definite results with this alkaloid we have not experimented upon other indicators.

One cc. of twentieth normal acid being equivalent to 0.0142 grm. anhydrous morphine, the number of cc. of the acid consumed by the two and a half gram nes opium multiplied by 0.568 ($=0.0142.^{100}/_{2.5}$) gives the percentage of morphine in the opium.

When it is desirable to control the alkalimetric assay with a iodometric one, the contents of the beaker are emptied in a 250 cc. measuring flask, washing the beaker two or three times with small quantities of water, the flask filled up to 250 cc., about 3 or 4 grammes calcium hydrate added and the mixture shaken for about an hour. This treatment removes a good deal of the coloring matter, but keeps the morphine in solution. Fifty cc., which represents half a gramme of opium, are now filtered off into a 100 cc. flask and the liquid slightly acidulated with hydrochloric acid. The liquid will now be only slightly colored. Twenty cc. of the standard iodine are now run out from a burette into the flask, the latter filled up to 100 cc. and the flask well shaken till the supernatant liquid becomes perfectly transparent but has a dark red iodine color.[7] Fifty cc. are now filtered off and the excess of iodine determined by the standard sodium thiosulphate, using starch as indicator. The amount of iodine consumed by the half gramme of opium multiplied by 150 ($=0.75 \times 100 \times 2$)[8] gives the percentage of morphine in the opium.

If only an iodometric assay be desired but one gramme opium need be taken for the assay, and the latter conducted exactly as described above up to the point where the chloroform-alcohol has been removed by evaporation. At this point the residue is taken up with good lime water by rubbing the evaporating dish thoroughly

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[7] See our article in J. Am. Chem. Soc., 1898, p. 722; Proc. Am. Phar. Assoc., 1898, p. 368.

[8] 0.75 is here taken instead of 0.74914 which is the factor for morphine (loc. cit. 724).

with it, pouring the mixture in a 100 cc. flask, filling the latter up with lime water to make 100 cc., shaking the flask about an hour, filtering off 50 cc. into another 100 cc. flask, acidulating and finishing as above.

Three assays of a sample of opium, which by the method of the U. S. P. 1890 was found to contain 14 percent morphine, were carried out by the method described in this paper. Both the alkalimetric and iodometric methods, agreeing quite well with each other, gave results considerably above those obtained by the U. S. P. method.

	Opium taken in grammes.	N/20 acid consumed by 2.5 grammes opium.	Grammes of iodine consumed by half a gramme opium.	Percent morphine found.	
				Alkalimetr.	Iodometr.
1.	3	31.1	0.116652	17.66	17.50
2.	3	31.5	0.116672	17.90	17.50
3.	3	31.3	0.116590	17.78	17.49

Comparing the assay method described in this paper with the other methods hitherto in use, it can be seen that our method is perfectly free from the deficiencies inherent in most other methods of opium assay. These deficiencies can be summed up as follows:

1. In most of the methods there is no proof that the opium is completely exhausted.

2. It is not proven that the narcotine is fully removed and the same may be said of most of the other opium alkaloids beside morphine.

3. The heat of evaporation is liable to affect morphine injuriously, easily oxidizable as it is.

4. The crystalline precipitation of morphine is not complete, and it is not known exactly how much of it is left in the mother liquor.

5. Some other matters are carried down with the precipitated morphine and weighed as such.

The last two sources of error might in some cases compensate for each other, but as Dr. Squibb has very correctly remarked,[9] it is not a safe policy to admit the principle of opposite errors correcting each other in any important assay.

Besides, the fact that both the alkalimetric and the iodometric estimation of morphine, as we have proposed them, without the above

[9] Am. Drugg. 1893, April 6, p. 204.

mentioned sources of error, give higher results than the U. S. P. gravimetric method, would seem to prove that in the U. S. P. method either the extraction or the precipitation of the morphine or both are incomplete, and that the loss is not compensated for by the impurities adhering to the alkaloid.

That considerable morphine is left in the mother liquor of the U. S. P. method can be easily explained by the consideration that the mother liquor contains alcohol, ammonia and extractive matter, all three favoring the solubility of morphine, which is not strictly insoluble in water itself. On the other hand it would appear that in our method practically all the morphine and almost nothing but the morphine of the opium is titrated either with iodine or acid. Both the removal of most other alkaloids, and the full extraction of the morphine are governed by Wagner's reagent, surely one of the most delicate reagents for alkaloids. Morphine being a strong base, it is a favorable one for estimation by standard acid. The completeness of precipitation of morphine by iodo-potassium iodide we think we have sufficiently shown, as stated in our previous paper,[10] by operating upon pure morphine. Indeed, this completeness of precipitation was proven long ago by Jörgensen.[11]

We desire to make comparative estimations of a number of different samples of opium, and hope to report the results in the near future. University of Michigan, May 12, 1899.

Acet-p-sulphanilate of Sodium.

By *Geo. W. Funck.*

Synonyms. — 1. p-Acetylsulfanilsaures Natrium,[1] Nietzky and Benckiser, 1884; Engl.: p-acetsulphanilate of sodium.

2. p-Acetanilinsulfonsaures Natrium,[2] Beilstein; Engl.: p-acetanilinsulphonate of sodium.

3. Cosaprin*,[3] P. Schwarz, 1897; Engl.: same, or cosaprine.

[10] J. Am. Chem. Soc. 1898, p. 724.
[11] J. prakt. Chem. (2), 2, p. 438.

[1] Ber. 17, p. 707.
[2] Beilstein: Handb. d. org. Chem. [3rd ed.] vol. 2, p. 569.
[3] Pharm. Ztg. 42, pp. 131 and 538.
* Cosapyrine (See Journ. Soc. Chem. Ind., 17, No. 8; abstracted in Pharm. Review, 16, p. 474) is evidently due to typographical error.

4. Acetanilidsulfosaures Natrium.[4] Hoffmann-La Roche & Cie., 1899; Engl.: acetanilidesulphonate of sodium.

History. This compound was first prepared by Nietzky and Benckiser[1] in 1884 while studying the acetylization of aromatic amido sulphonic acids. It was introduced as cosaprine into modern materia medica by P. Schwarz[3] of the firm F. Hoffmann-La Roche & Cie of Basel with the object of providing a more soluble form of acetanilide as antipyretic.

Formation and Preparation.— 1. According to Nietzki and Benckiser[1]: Sulphanilate of sodium—the free acid does not react —is dissolved in acetic acid anhydride by heating the mixture to 140°. Upon cooling the thick mass is dissolved in little water, alcohol is added and then carefully ether when small colorless prisms of the sodium salt are precipitated.

The action of the acetic acid anhydride on the sulphanilate of sodium—without taking into consideration any side reactions—can be indicated by the following equation:

$$2C_6H_4\begin{matrix}\diagup NH_2\\ \diagdown SO_3Na\end{matrix} + O\begin{matrix}\diagup COCH_3\\ \diagdown COCH_3\end{matrix} = 2C_6H_4\begin{matrix}\diagup NH.COCH_3\\ \diagdown SO_3Na\end{matrix} + H_2O.$$

2. According to P. Schwarz (F. Hoffmann-La Roche & Cie. of Basel) strong acetic acid will suffice for the acetylization. According to their patent (D. R.-P. No. 92,796), the sodium salt is separated from the free sulphanilic acid, which results as a by-product, in the following manner. The product of reaction is treated with a little hot water which leaves the free sulphanilic acid behind. From the cooled aqueous solution the acetylsulphanilate of sodium is precipitated with 98 to 99 p. c. alcohol. In place of the alcohol, a mixture of alcohol and ether can be used. In this case it is necessary, however, to remove the sodium acetate from the product of reaction by extracting the latter with hot alcohol.

The reactions can evidently be expressed by means of the following equations:

1. $$\underbrace{C_6H_4\begin{matrix}\diagup NH_2\\ \diagdown SO_3Na\end{matrix}}_{\text{p-Sulphanilate of sodium.}} + \underbrace{HO.CO.CH_3}_{\text{Acetic acid.}} = C_6H_4\begin{matrix}\diagup NH.CO.CH_3\\ \diagdown SO_3Na\end{matrix} + H_2O.$$

2. $$C_6H_4\begin{matrix}\diagup NH_2\\ \diagdown SO_3Na\end{matrix} + HO.CO.CH_3 = C_6H_4\begin{matrix}\diagup NH_2\\ \diagdown SO_3H\end{matrix} + NaO.CO.CH_3.$$

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[4] Zeitsch. d. allg. oester. Apt.-Ver., 53, p. 265; also Am. Dr. & Ph. Rec., 34, p. 225.

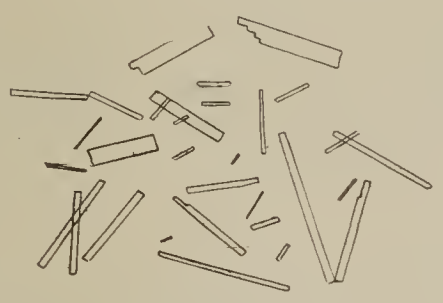
3. According to Hoffmann-La Roche & Cie.[4] By the action of the normal or acid sulphites of the alkali and alkali-earth metals on the para halogen substitution products of acetanilide in a suitable solvent at a high temperature.

$$p\text{-}C_6H_4\begin{matrix}\diagup NH.CO.CH_3\\ \diagdown X\end{matrix} + NaSO_3Na = p\text{-}C_6H_4\begin{matrix}\diagup NH.CO.CH_3\\ \diagdown SO_3Na\end{matrix} + NaX.$$

If the acid sulphite is used, the free acetsulphanilic results, which can be converted into the sodium salt.

$$p\text{-}C_6H_4\begin{matrix}\diagup NH.CO.CH_3\\ \diagdown X\end{matrix} + NaSO_3H = p\text{-}C_6H_4\begin{matrix}\diagup NH.CO.CH_3\\ \diagdown SO_3H\end{matrix} + NaX.$$

Physical Properties. Small colorless prisms[1], or a white micro-crystalline mass[3], or micro-crystalline powder[4], or amorphous



Crystals prepared by writer.

Formless powder of the commercial article (F. La-R. & Cie.).

powder[5]; white[4], or greyish-white[5]; hygroscopic[3] (?); readily soluble in water, difficultly soluble in alcohol* and almost insoluble in ether[1 3] and chloroform[4]. It is odorless and of a mild saline taste[5].

Chemical Properties.—Its aqueous solution has a slightly acid reaction[5]. When boiled with concentrated hydrochloric or dilute sulphuric acid it is hydrolized to acetic and sulphanilic acids[1].

$$C_6H_4\begin{matrix}\diagup NH{:}CO.CH_3\\ \diagdown SO_3Na\end{matrix} + \overset{H:OH}{HCl} = C_6H_4\begin{matrix}\diagup NH_2\\ \diagdown SO_3H\end{matrix} + HO.CO.CH_3 + NaCl.$$

In the presence of alcohol, ethyl acetate is formed.

If 0.2 g. of acet-p-sulphanilate of sodium in a crucible† are evaporated on a boiling waterbath with 3 ccm. of fuming nitric acid, sp. gr. 1.52, and the operation repeated at least three times, a residue remains, which is not spontaneously combustible, but will burn quickly when touched with a flame[6]. This reaction, however, is not characteristic of cosaprine, but shared by numerous other derivatives of acetanilide.

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[5] Therapeutische Monatshefte, 11, p. 428.

* According to Hoffmann-La Roche & Cie. it is insoluble in alcohol, but according to actual experiment it was found to be soluble in about 45 parts of 95 p. c. alcohol.

† Diameter of botom, 3 cm.; upper diameter, 8 cm.; depth, 5 cm.

[6] Pharm. Centrh. 39, pp. 865 & 867.

Hynson's test* applied to this compound leaves a corona like amorphous residue of sulphur yellow color with brownish, evidently charred, spots.

Therapeutic Properties.—Experiments by Vámossy and Fenyvessy[5] on the rabbit show that the sulphonate, like the basal compound, possesses decided antipyretic properties. However, instead of requiring about double the dose of antifebrine [$C_6H_5NHCOCH_3 : C_6H_4\begin{cases}NHCOCH_3\\SO_3Na\end{cases} = 1 : 1.75$] it requires about four times as large a quantity of the latter than of the former to bring about the same reduction in temperature. But even with this much larger dose, the toxic action is much less than with the smaller dose of acetanilide. On account of the much greater solubility the antipyretic action is brought about much more quickly. For the same reason it is also ended sooner, a defect which can be remedied by the administration of successive small doses. On account of its solubility in water it can also be used for injections.

Rosen,[7] who made a number of clinical observations, pronounces it a reliable remedy in influenza and acute rheumatism. He recommends doses of 1 g. every two hours to begin with. As improvement sets in, the dose is to be reduced to 1 g. three times daily.

Bibliography.*

Nietzki, R., and Th. Benckiser. **1884.**
Ber. 17, p. 707.
Ueber die Acetylderivate aromatischer Amidosulfosäuren.
The method of preparation—acetylization with acetic acid anhydride—of the sodium salt of acetsulphanilic acid is given.

Vámossy, Z. v., and B. Fenyvessy. **1897.**
Therap. Monatsh., 11, p. 428. [Apt. Ztg., 12, p. 550; Chem. Centrbl., 68 II, p. 709; Phar. Post., 31, p. 214; Pharm. Centrh. 38, p. 129.]

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* For method of procedure see Proc. 46, p. 345.

[7] Therap. Monatsh. 13, p. 156.

[8] Merck's Archives, 1, p. 148; from Klin. ther. Woch. 6, p. 40.

* Whereas the chemical bibliography is considered fairly complete, no pretense whatever is made with respect to completeness of the therapeutic and medical literature.

Ueber Phesin and Cosaprin.

The antipyretic value and the toxic properties of cosaprine are compared with those of antifebrine. The advantages which the former possesses over the latter are its ready solubility and rapid action, also that its toxic properties are much less marked. The short period during which it acts may possibly be considered a disadvantage. The experiments were conducted on the rabbit, not on man.

P. Schwarz. **1897.**

Pharm. Ztg., 42, p. 131. [Merck's Report, 6, p. 212; Pharm. Post, 30, p. 113; Chem. Centrbl. 68 I, p. 611; Proc. A. Ph. A., 45, p. 732.]

Cosaprin, ein neues Antipyreticum.

On account of the sparing solubility of antifebrine and its toxic properties (cyanosis), also on account of the sporadic use of sulphanilic acid in therapy, the author acetylized the sodium salt of this acid. An improved method for its preparation is given and the announcement of its application as an antipyretic is made.

F. Hoffmann-La Roche & Co. **1897.**

Pharm. Ztg., 42, p. 538. [Merck's Report, 6, p. 606; Chem. Centralbl., 68 II, p. 687.]

Darstellung von acetsulfanilsaurem Natrium in reinem Zustande. [D. R.-P. No. 92,796.]

The method of preparation—acetylization with glacial acetic acid—is given and details of reaction explained. To be used as substitute for antifebrine as antipyretic.

Thoms, H. **1897.**

Die Arzneimittellehre d. org. Chemie, [2 ed.] p. 57.

A brief account according to Hoffmann-La Roche & Cie.

Mindes, J. **1898.**

Manuale der neueren Arzneimittel [2nd ed.], p. 114.

Brief account according to Hoffmann-La Roche, and Vamossy and Fenyvessy.

——— **1898.**

Berl. klin. Wochensch. 1898. [Therap. Monatsch., 13, p. 156.]

A clinical report on the use of cosaprine in the Moabiter Krankenhaus of Berlin.

F. Hoffmann-La Roche & Co. **1899.**

[Chem. Ztg., 23, p. 273; Zeitsch. d. allg. oest. Apt.-Ver., 53, p. 265; Merck's Report, 8, p. 218; Am. Dr. and Ph. Rec., 34, p. 225.]

Acetanilidsulfosaures Natrium.

A statement of the G. I. P. 101,777 with reference to preparation. Not to be confounded with patent No. 79,174 of Farbenfabriken in Elberfeld for preparation of ω sulphonic acid of acetanilid (Ber. 28, p. 401 c.)

Rosen, R. **1899.**

Therap. Monatsh., 13, p. 156. [Merck's Archives, 1, p. 152.]

Ueber Cosaprin und Thesin, zwei Ersatzmittel für Antifebrin und Phenacetin.

A report on about fifty clinical cases. They pronounce cosaprine a reliable remedy in influenza and acute rheumatism.

Schudmak, A. **1899.**

Klin. ther. Woch., 6, p. 40. [Merck's Archives, 1, p. 148.]

Report on sixty cases of bronchitis, rheumatism and diarrhœa with formulas for administration.

Pharm. Chemical Laboratory,
University of Wisconsin.

The Distinction of True Extract of Vanilla from Liquid Preparations of Vanillin.

By *William H. Hess.*

An extract of vanilla can not be made artificially that will duplicate the one made from the bean itself, either in respect to chemical behavior, or with regard to usefulness as a flavoring agent. During the sweating process in preparing the vanilla bean for the market, chemical changes of unknown nature take place, and as a result of these changes, the aroma is much improved. The importance of this process is well known, and those conditions which produce the best flavor are carefully studied.* To provide the various ingredients of the vanilla bean artificially and so treat them that the delicate aroma incorporated in an alcoholic tincture shall equal that acquired from the bean is a hopeless task, and it is quite as difficult to deceive the analyst by such a product. The vanillin that is synthesized and put upon the market is identical with the vanillin extracted from the

* See article by Prof. H. H. Rusby, Merck's Report, Feb. 1, 1898, p. 74.

bean itself. There are other constituents as tannin, gum, and organic acids which might be duplicated and whose origin could not be easily proved. There is one important constituent, however, which will be extremely difficult to replace and that is the resin. This resin behaves so differently from other resins that its separation and identification is a most valuable means of proving the origin of "vanilla extract."

Vanilla beans contain from four to eleven percent of this resin. It is of a dark red to brown color. The coloring matter furnished by this resin constitutes about one half of the color of the tincture of vanilla. Since manufacturers desire a deeply colored product, they are careful to get all the resin in solution. This resin is soluble in 50 p. c. alcohol so that in an "extract" of high grade where plenty of alcohol is used, all the resin is kept in solution. In cheap extracts where as little as 20 p. c. of alcohol by volume is sometimes used, an alkali, usually potassium bi-carbonate, is added to aid in getting resin, gum etc. in solution, and also for the purpose of preventing subsequent turbidity. The color is thus deepened very materially. As vanillin is acidic in character and decomposes carbonates to form salts, the delicate flavor is impaired to a considerable extent by the addition of an alkaline carbonate, and a foreign odor is thereby introduced that is quite disagreeable and not difficult to recognize.

In testing preparations of vanilla it is well to make a pharmacopœial tincture to be used in parallel tests, along with the sample of unknown purity. The following simple tests have been found useful:

I. Dilution Test.

Place a few cubic centimetres of the alcoholic tincture in a test tube and add water slowly to three times the original volume and shake. If no alkali has been used in making the extract, a flocculent reddish-brown precipitate will separate out. There should be but a slight turbidity. A milky solution would indicate foreign resin. Now add hydrochloric acid a drop at a time to a portion of the diluted sample. (Turbidity results at once, due to extracted matter held in solution by the plant bases, as well as by alkali purposely added.) The turbidity produced on acidifying should be slight (absence of foreign resin). Some practice with this simple test will enable an inspector to judge somewhat of the character of a "vanilla extract." If alkali have been used, the turbidity increases considerably, and the color will fade perceptibly when acid is added.

II. Separation and Identification of the Resin.

Place 25 cc. of the "extract" to be examined in an evaporating dish and drive off the alcohol on a water bath. When the alcohol is all gone, make up to about the original volume with water. If alkali have not been used in the manufacture of the "extract", the resin will appear as an amorphous, flocculent, red to brown residue. Acidify with a few drops of acetic acid* to free the resin from bases, and the whole of the residue will separate out leaving a partly decolorized and clear supernatent liquid, after standing a short time. If it is desired to weigh the resin for a quantitative determination, several hours are necessary for its complete separation. Collect the resin on a filter, wash with water, and reserve the filtrate for further tests.

Place a piece of the filter with the resin attached in a few cubic centimeters of dilute caustic potash. The resin dissolves to a deep red solution. On acidifying, the resin is reprecipitated.

Make a solution of the resin in alcohol. To one portion of this alcoholic tincture add a few drops of ferric chloride. No striking coloration is produced. To another portion of the alcoholic tincture add some hydrochloric acid, and again there is little change in color. Most resins give color reaction with ferric chloride or hydrochloric acid in alcoholic solution.

III. Tests of Coloring Matter.

a. For caramel:—

Concentrate a portion of the filtrate obtained from the resin in an evaporating dish on a water bath until the depth of color is approximately that of the original tincture. To this solution add a few drops of strong hydrochloric acid, (nitric or dilute sulphuric acid will also serve) and heat gently. If caramel be present, a yellowish-red, flocculent precipitate is formed, very much resembling a precipitate of iron hydroxide in color and texture. Cool and filter out this precipitate and wash it with water. It is insoluble in water, strong alcohol, or ether. It is soluble in dilute caustic potash, in glacial acetic acid, and in dilute alcohol. About one-half the color of caramel is thus removed. For further tests for caramel see Amthor, Zeitsch. f. anal. Chem., 1885, p. 30.

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* If much acetic acid is used here, it must be removed by evaporation before testing for caramel.

b. For an azo dye:—

To a small portion of the filtrate add some ammonia. With a natural product the color is very much deepened. Now add some zinc dust and let it digest. The color should not fade entirely even on heating, but the solution will assume a tint about as deep as it was before adding ammonia. If the coloring be due to an azo dye, it will fade to a colorless solution, the azo being reduced to the hydrazo compound. Pour some of the decolorized product into an open dish so as to expose considerable surface of liquid to the oxygen of the air. In case an hydrazo group has been formed, it will be slowly oxidized back to the colored azo compound. The oxidation may be hastened by adding some hydrogen peroxide, and the color will return at once.

Test a portion of the filtrate from the resin for tannin. This substance is present in small quantity only, and should not be found in great excess.

To another portion of the filtrate from the resin add a few drops of lead acetate solution. A bulky flocculent precipitate should form, showing the presence of organic acids and extractives in considerable quantity. This precipitate will carry with it nearly all the coloring matter left in the filtrate from the resin.

Vanilla "Extract" is frequently adulterated with the "Extract of Tonka." This sophistication is best detected by ascertaining the presence of coumarin, the odoriferous constituent of the Tonka bean. For a quick method of detecting coumarin in presence of vanillin, see a previous paper from this laboratory.*

This investigation has been made at the request of Prof. A. B. Prescott, to whom I wish to express my thanks for counsel in the work.

University of Michigan, April 25, 1899.

Provisor Dingeldei.

Ein höchst ehrenwerther Charakter, welchen Schreiber dieser Zeilen bei der Recension von Maubach: Das Charakterbild des Apothekers in der Litteratur (Siehe Pharm. Review, 16, p. 40) nicht wenig vermisste, ist Hanns von Zobeltitz's Provisor Dingeldei.† Eine mehr

* Coumarin and Vanillin, their Separation, Estimation and Identification in Commercial Extracts. By William H. Hess and Albert B. Prescott. Phar. Review, 17, p. 7.

† Daheim, 30, p. 360.

sympathische Schilderung aus dem deutschen Apothekerleben wäre wohl schwerlich zu finden. Man möchte fast meinen, dass dieselbe nicht nur angeblich, sondern wirklich autobiographisch sei. Die Schilderung ist jedenfalls dem Ideale getreu, wie es nicht nur so mancher kleine Knabe, sondern auch manch erwachsener Jüngling in der Brust getragen, ehe er zu viel von den Schattenseiten aus eigener Erfahrung kennen lernte. Diejenigen, welche der Pharmacie als erster Liebe noch ein freundliches Andenken gewahren, welche trotz Sturm und Drang ihr noch treu anhängen, wird die Beschreibung der Apotheke am Markt auch noch im späteren Leben anheimeln; sie werden mit Zobeltitz sagen: "Ich sehe sie so deutlich vor mir, als stünde sie mir wirklich noch vor den leiblichen Augen, die alte Apotheke am Markt." Ob sie alle aber mitsprechen werden "in der ich meine glücklichsten Kinderjahre verlebte" ist doch zweifelhaft, denn ein jeder hat wohl keinen guten Onkel Jan als Apothekeronkel gehabt. Doch lassen wir Zobeltitz weiterreden: "Das stattliche alte Patrizierhaus, auf dessen schmuckes Aussehen Onkel Jan — eigentlich hiess der gute Onkel Johann, aber das erfuhr ich erst bei seinem Begräbniss — nicht wenig stolz war, erschien mir immer als der schönste Palast, und ich fragte mich wohl manchmal im Stillen, ob unser König gleich herrlich wohnen könne. Eins hatte sein Haus ja jedenfalls nicht: den prächtigen Mohren über dem Eingang zur Offizin, welcher der Apotheke den Namen gegeben hatte. Es sollte nämlich wirklich und nicht etwa umgekehrt sein. Wenn Onkel Jan einmal seinen guten Tag hatte, was meist nach den Markttagen der Fall war, an denen die Bauern ihren Massenbedarf an Medizin auf Vorrat einzukaufen pflegten, dann erzählte er gern, dass sein Urgrossvater als Schiffsarzt zur Zeit des Grossen Kurfürsten nach der Guineaküste gesegelt sei, dass er von dort einen leibhaftigen Mohren mitgebracht habe, dessen Abbild er dann, als er sich in der lieben Heimat als wohlbestallter Arzt und Apotheker niedergelassen, zum Wahrzeichen seines Hauses erkoren hatte. Es war ein phantastischer Geselle, der gute Mohr. Zum grossen Leidwesen von Tante Minchen, die etwas zimperlicher Natur war, hatte sein Verfertiger bezüglich der Bekleidung sich auf eine goldene Krone beschränkt; anstatt des fehlenden Feigenblattes krümmte sich aber zu Füssen der Figur ein ungewisses Etwas, das nach der Behauptung von Onkel Jan, der sich als gelehrter Botaniker ja darauf verstehen musste, ein Palmenblatt war, und in der kühn ausgestreckten Rechten trug Alibaba, wie der Mohr von altersher im ganzen Hause genannt wurde,

einen Speer, an welchem eine Schlange heraufkletterte — eine recht naturalistische Wiedergabe des Aesculapstabes. Alljährlich einmal, im Frühjahr, wurde Alibaba von seiner stolzen Höhe herabgeholt, um die Schäden, die der Herbstregen und der Winterschnee ihm zugefügt, wieder gut zu machen. Das war allemal ein Festtag für mich. Mit Zittern und Zagen, und doch voll seliger Erwartung, sah ich zu, wenn Christian, unser alter Hausknecht und Allerweltsfactotum, die schwere Holzpuppe von ihrem luftigen Standpunkt herunternahm, und keine Macht der Welt, nicht einmal die Aussicht auf die schönste Pflaumenmusstulle, hätte mich bewogen, von seiner Seite zu weichen, bis er den ganzen Mohren wieder pechrabenschwarz angepinselt hatte. Und dem Alten dünkte diese Arbeit kaum weniger wichtig wie mir. Mit der grössten Peinlichkeit setzte er Strich neben Strich, vergoldete die Krone neu und malte den Speer und die Schlange in blau und rot an. Unweigerlich wurde der Speer in dem einen Jahre rot und die Schlange blau, im nächsten aber der Speer blau und das Krichtier rot. Als ich mir einmal erlaubte, meinem Zweifel Ausdruck zu leihen, ob es wirklich zinnoberrote Schlangen in Afrika gebe, geriet Christian ordentlich in Wut. 'Du siehst doch, dass ich ihr rot anmale,' schnob er mich an. 'Wo würd ich denn des thun, wenn's nich so 'ne rote Biester geben thäte!' Damit war der Zwischenfall endgültig entschieden und erledigt."

Nach dieser hochwichtigen Einleitung ist man genugsam auf ein "Ja, es war schön in der Mohrenapotheke" vorbereitet. Schön war es in Tante Minchens Altjungfernreich, schön war's auch in Onkels Zimmer mit seinen Bücherborden, ausgestopften Thieren und gräulichen Präparaten, von denen *anno* 13 die Kosaken den Spiritus abgetrunken hatten. Aber noch schöner als alles war die Apotheke selbst, in welche unser Autobiograph als Knabe nicht hinein durfte. Dies hielt ihn aber nicht davon ab, doch hinein zu gehen, und traf ihn dann sein gestrenger Herr Onkel, dann hiess es: "Wie oft soll ich's denn sagen, Dingeldei, dass Sie mir den Jungen rauswerfen sollen! Kinder gehören nicht hierher!" Und zu dem Knaben gewandt: "Mach' dass Du fortkommst, Du Hans in allen Gassen! Aber wart, komm 'mal erst her —" Das Herkommen brachte aber keine Strafe, sondern irgend eine Süssigkeit ein.

Wir haben hier den strengen Apotheker, aber auch den liebenden Mann, der als Junggeselle seine Liebe auf das Geschwisterkind überträgt. Der gestrenge Herr Apotheker konnte aber auch kaltlächelnd

Bären- und Mückenfett verkaufen und dergleichen mehr. Es gab nämlich in der Mohrenapotheke "alles und noch einiges." "Und niemand fand in jener guten Zeit daran Grund zum Tadel. Warum auch?"

Obgleich Umstände, die das Apothekerleben controlliren, geneigt sind, Sonderlinge heranzubilden, nimmt unser Autor die Apotheker in Schutz, indem er sagt: "Es ist gewiss unrecht, wenn man den Apothekern nachsagt, dass sie im Gegensatz zu allen übrigen Menschen, die nur eine Schrulle hätten, sich deren meist zweier und meist recht grosser, gut ausgebildeter erfreuten." Dies hindert ihn aber nicht daran, Onkel Jan als Sonderling erscheinen zu lassen, denn seine "Hauptmarotte waren weibliche Handarbeiten." Jedoch wurde er als Sonderling von seinem Provisor Dingeldei noch gewaltig übertrumpft. Dieser hagere Mensch war der stärkste Esser am Tisch, aber von Tante Minchen zu weiterem Essen angespornt, erwiderte er melancholisch das Haupt schüttelnd: "Sie wissen ja, Fräulein, dass ich gar keinen Appetit habe."

Doch diese Sünde könnte ihm ein Schriftsteller, der ihn als Helden einer Geschichte benutzt, schon verzeihen. Das Schlimme ist, er dichtet, und dazu ist er obendrein "Berufsdichter", denn alle seine Poesien galten seinem Berufe, der edlen Pharmacie. Des Provisors Günstling, unser Erzähler, musste geduldig jeden neuen Vers sich vorlesen lassen und bekam als Lohn für seine Sympathie ein Stück Magenmorselle. Eine Probe von Dingeldei's Dichtkunst darf aber nicht vorenthalten werden.

"Im Winter, habest Husten Du,
Gebrauch' den Pfefferminzcachou,
Auch Sodener Pastillen sind
Nicht zu verachten, liebes Kind.
Bei Skrophelu, Schwindsucht, Magerkeit
Ist Leberthran stets an der Zeit!"

Wie es sich später herausstellt, hatte Dingeldei einst geliebt, oder vielmehr er liebte noch zur Zeit unserer Erzählung. Er war aber zu arm gewesen und war in die Fremde gereist. Als er zurück kam, hatte ein Glücklicherer seine Geliebte heimgeführt. Später nach dem Tode ihres Mannes hatte er sogar für das Wohl ihrer Kinder gesorgt. Eines Tages nun bringt der Postbote einen inhaltsschweren Brief: er enthält die Nachricht von dem Tode seiner stets Geliebten. So findet ihn sein Günstling und mit einem "Nicht weinen, Onkel Provisor,

nicht weinen. Bitte, bitte, nicht weinen" schmiegt er sich dicht an die Seite des unglücklichen Alten und weint mit ihm.

Doch ein Unglück scheint das andere zu gebären. Ein Rezept wird mechanisch in Empfang genommen und wäre vergessen worden, hätte der Knabe den träumenden Provisor nicht daran erinnert. Mechanisch wird die Medizin bereitet, das Rezept einzutragen wird vergessen. Ohne das gewöhnliche "Gott gebe gute Besserung!" wird die Medizin an die verblüffte Kundin abgegeben. Der Provisor brütet wieder vor sich hin und in der Offizin herrscht ungewöhnliche Stille.

Dieser trügerische Friede wird aber nach kurzer Zeit jählings unterbrochen und zwar durch den Medizinalrat, der mit dem Rufe "Wo ist der Herr Senator?" in ganz ungewohnter Weise in die Apotheke stürzt.

Es stellte sich nun bald heraus, dass der Provisor statt 0.05 *Morphium muriaticum*, wie verschrieben, die zehnfache Dosis verabreicht hatte. Das Bewusstsein eines Vergehens, das mit dem Tode, wenngleich unabsichtlich, eines Mitmenschen enden konnte, schmetterte Dingeldei gänzlich nieder. Als Onkel Jan, der zuerst mit dem Arzt um die Wette raisonnirt hatte, durch unseren kleinen Erzähler von dem Briefe und dessen Inhalt erfuhr, erweichte er plötzlich. "Marie ist tot?" sagte er weich und auch in seinen Augen schimmerte es feucht, "armer Freund — jetzt verstehe ich —" Sogar der Arzt, "der knorrige alte Mann", als er eine Stunde später von dem glücklichen Durchkommen der Patientin Bericht erttattete, wurde weich, als er den Sachverhalt erfuhr, und verliess gerührt und ernst die Apotheke.

"Die Sache sollte vergessen und begraben sein", hatte der Arzt gesagt. "Wer sie aber nicht vergessen konnte, das war unser Provisor selbst. Ihn duldete es nicht mehr in seinem Beruf, der ihm ein Menschenleben hindurch so lieb und teuer gewesen war. Er war nicht zu bewegen, das Laboratorium noch einmal zu betreten, und kaum vier Wochen später verliess er die Mohrenapotheke für immer."

Draussen vor dem Thore siedelte er sich in einem winzig kleinen, von wildem Wein umrankten Häuschen an. Mehrere Jahre später war er plötlich verreist. Als er wiederkam, brachte er ein zehnjähriges Mädchen mit blonden Locken und dunklen, fröhlichen Augen mit — "eine neue, liebe Spielgefährtin" für unseren Erzähler — das Tochterkind seiner Marie. *E. K.*

"Es giebt mehr eingebildete Gesunde, als eingebildete Kranke."
Fliegende Blätter.

MONTHLY REVIEW.

Chemistry.

Sugar from Albumin.—Some time ago Blumenthal reported that he had obtained a sugar (see p. 158) from white of egg by treatment with hydrochloric acid, and that it was probably a product of the dissolution of the albumin molecule. Subsequently several other observers obtained similar results, and in following up the inquiry with Paul Meyer, a sugar was obtained from albumin of egg yolk. Analysis showed that both this sugar and that obtained from egg albumin was a hexose. Judging from the characters of the osazone it was not mannose or fructose, and the question whether it was galactose or glucose was not positively settled. Moreover, it appeared that other carbohydrates could be eliminated from albumin, forming osazone compounds similar to that of the pentose obtained from nuclein. In regard to the question as to the origin of the carbohydrate obtainable in this way, Blumenthal agrees with Krawkow in thinking that it should not be regarded as an integral part of the albumin molecule, since they were able to ascertain that after the separation of the carbohydrate group a residue remained having the characters of albumin, but no further carbohydrate could be obtained from it by repeating the treatment with acid. Hence they infer that in the elimination of the carbohydrate there is no dissolution of the albumin molecule as in the case of putrefaction or in pancreatic digestion. More probably the albumin molecule, having a varied capacity of combination with other substances, such as acids and alkalies, is capable of entering into combination with carbohydrates forming compounds analogous to glucosides. [Ph. Journ. 62, p. 227; from Ber. 32, p. 274.] *E. K.*

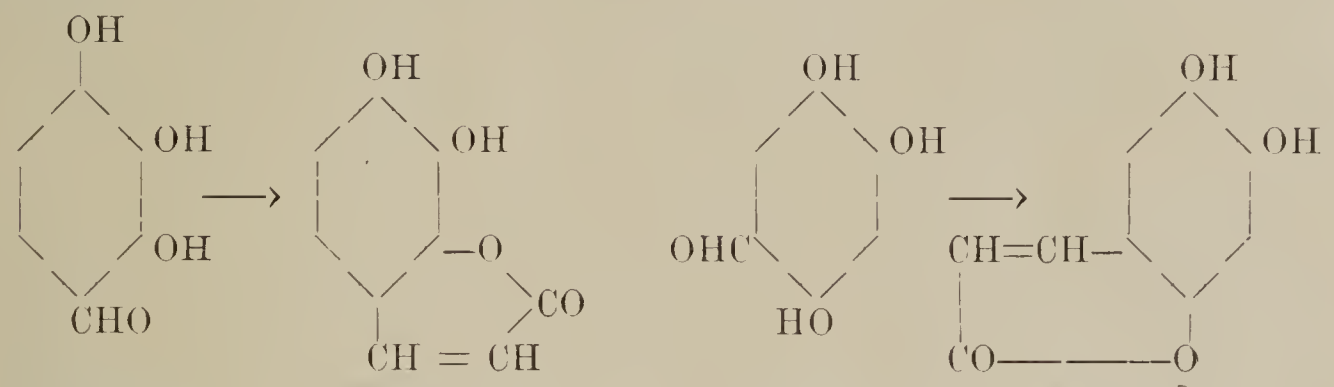
Synthesis of Asarone. — Gattermann and Eggers having obtained asarylic aldehyde, an oxidation product of asarone, synthetically from the trimethyl ether of the hydroxy hydroquinone, reacted on this aldehyde with sodium propionate and propionic acid anhydride. They obtained an artificial asarone identical in every respect with the natural compound and assign to it the following formula, $C_6H_2.CH:CHCH_3.(OCH_3)_3 = 1:2:4:5$.

[Ber. 32, p. 289.] *E. K.*

On the Molecular Weight of Digitogenin and its "Abbau Products."—A. Edinger claims that the molecular weights, as determined by him, are again as large as formerly supposed. For digitoic and hydrodigitoic acids (by means of naphthalin) he found them even four times as large as usually supposed. From his results he draws the conclusion that several of the acids are dibasic acids and that the two results specially mentioned are abnormal. To the thoughtful reader the question arises what is normal, what abnormal?

[Ber. 32, p. 339.] *E. K.*

Synthesis of Daphnetin and Aesculetin.—The synthesis of daphnetin from pyrogallol aldehyde and of aesculetin from oxyhydroquinone aldehyde has been effected by Gattermann and Koebner by means of Perkins' synthesis with anhydrous sodium acetate and acetic acid anhydride. The acetyl derivatives obtained in this way were saponified with sulphuric acid and the artificial products resulting corresponded in every respect with the natural compounds.



Pyrogallol aldehyde. Daphnetin. Oxyhydroquinone aldehyde. Aesculetin.

[Ber. 32, p. 287.] *E. K.*

Tests for Boric Acid. — V. Lehner and J. S. C. Wells compare the sensitiveness of the several tests for boric acid and recommend an improvement of the well known boric ether or flame test as follows: In a test-tube place 1 cc. of the solution to be tested, add 2 cc. of conc. sulphuric acid and then 10 cc. of alcohol and close the tube with a cork through which passes a glass-tube drawn out to form a moderate sized jet. The mixture is now heated in a Bunsen flame to freely volatilize the alcohol and this is burned in the flame of a second Bunsen burner as it escapes. By this means they were able to detect boron when 1 cc. contained 0.001 gm. of B_2O_3.

[J. Am. Chem. Soc., 21, p. 417.] *W. A. P.*

A Method of Analysis for Canned Condensed Milk.—F. S. Hyde describes the methods employed in the analysis of 21 samples of condensed milk. While the methods present nothing new, the results are interesting in that they show the composition of this article as found in the American market. Of the twenty-one samples all but three contained canesugar, those free from this addition being the so-called "Evaporated Milks." As to preservatives, the manufacturers seem to depend almost entirely on the use of canesugar in sufficient quantity. The following results were obtained:

Total solids varied from 71.16 to 79.12 percent in those containing added cane-sugar, and from 30.46 to 35.24 percent in the remaining three.

Milk-sugar ranged from 9.50 to 17.20 percent with an average of 11.12 percent.

Cane-sugar varied from 28.94 to 42.96 p. c. in those containing the same.

Fat was found to range from 6.73 to 11.82 percent, only five specimens containing over 10 percent. [J. Am. Chem. Soc. 21, p. 439.] *W. A. P.*

New Derivatives of Quabaïn.—This glucoside is readily hydrolized according to the following equation:

$$C_{30}H_{46}O_{12} + H_2O = C_6H_{12}O_5 + C_{24}H_{36}O_8.$$
Quabaïn. Rhamnose.

The last substance is dehydrated when boiled with dilute acids, yielding $C_{24}H_{28}O_4$. According to Arnaud, nitric acid, however, acts as an oxidizing agent as well as a nitrifying agent, yielding two nitro compounds, $C_{23}H_{34}(NO_2)_2O_6$ and $C_{23}H_{35}(NO_2)O_6$, at the same time splitting off one carbon atom as carbon dioxide. The dinitro compound behaves like an acid forming salt or at least salt-like compound.

[Apt. Ztg. 14, p. 156; from C. r. 126, p. 1873.] *E. K.*

Lamotetanine.—This new alkaloid, producing tetanus in animals, has been obtained by J. D. Philippo from the bark of *Tetranthera citrata* Nees. This lauraceous shrub, known as Ki-djersek in Lemoh (India), produces a lemon-like odor and its fruits have been used as an adulterant of cubebs. The alkaloid has been obtained in crystalline form and is supposed to have the following formula, $C_{19}H_{21}NO_5(OC_7H_5)_2$.

[Apt. Ztg. 14, p. 156; from Nederl. Tijdschr. v. Ph. en Tox., Oct. 1898] *E. K.*

On the Preparation of Metallic Lithium.—Up to the present time metallic lithium has been obtained by electrolyzing lithium chloride in the molten state. The reason why this metal can not be obtained from aqueous solutions by electrolysis is that it reacts with water, forming hydrogen and lithium hydroxide. It is evident that if a solvent for a lithium salt could be found upon which lithium does not act, the metal could be deposited from the solution by electrolysis, provided the solution proved to be an electrolyte. Pyridine is a solvent of this kind. It will dissolve lithium chloride and thus form a solution that conducts electricity.

Kahlenberg has found that lithium may be obtained in white metallic form from solutions of lithium chloride in pyridine by electrolysis at room temperatures, as follows: A concentrated solution of lithium chloride in pyridine is placed in a beaker into which a carbon plate (anode) and a bright iron plate or foil (cathode) are dipped. Platinum or some other metal may, of course, also serve as cathode, though when used as anode a metal (even platinum) is apt to be attacked and some of its substance carried over to the cathode. No diaphragm is necessary. With a difference of potential of but 14 volts between the electrodes, a current of from 0.2 to 0.3 amperes per 100 sq. cm. of cathode area will soon deposit a dense, well adhering silver white coating of metallic lithium. The deposit thus obtained possesses all the well known physical and chemical properties of the metal.

Lithium, being an alkali metal that is not very plentiful in nature, has thus far not found use in practical life in the metallic form; nor are the indications at present such that it will be used in practice. Metallic lithium

costs from three to five dollars per gram and is used only for scientific purposes, mainly as a sample for exhibition in connection with lectures on chemistry.

By means of the method just described the metal can readily be obtained from the relatively cheap chloride in quantities sufficient for most scientific purposes. The method of preparation, as well as the properties of the metal, can thus easily be demonstrated to a class of students in a short time with simple means. [Wisconsin Engineer, 3, p. 274.] *E. K.*

Volatile Oil from Origanum majorana.—This oil obtained from Schimmel & Co. was examined by W. Biltz in Semmler's laboratory. He finds that about two-fifths of the oil consists of terpenes, of which terpinene was identified as the nitrosite; and that of the remaining three-fifths dextrogyrate terpineol is the principal constituent. This was identified according to Wallach by oxidizing it to trihydroxy hexahydro cymene $C_{10}H_{17}(OH)_3$, and farther to the ketolactone, $C_{10}H_{16}O_3$. Six percent of esters were found upon saponification. The amount of ester, however, is said to be variable. Of the acids, acetic acid was identified. Inasmuch as the marjoram odor disappears with the saponification, the conclusion is drawn that the characteristic odor resides in the ester. A detailed account will be found in the Greifswald dissertation of the author, 1898.

[Ber., 32, p. 995.] *E. K.*

Occurrence of Methyl Salicylate.—The researches about the distribution of methyl salicylate in plants have been continued in the agricultural laboratory of the Botanical Garden at Buitenzorg in Java. By these investigations the ester has lately been found in a large number of plants. Besides the natural orders mentioned in our Report of October 1898, page 45, representatives of the following families have been found to contain methylsalicylate: *Acanthaceae*, *Artocarpaceae*, *Apocynaceae*, *Asclepiadeae*, *Bixaceae*, *Bignoniaceae*, *Burseraceae*, *Chrysobalanaceae*, *Dilleniaceae*, *Menispermaceae*, *Myristicaceae*, *Myrsineae*, *Pomaceae*, *Samydaceae*, *Sapotaceae*, *Styraceae*, *Violaceae*. [Report of S. & Co., Apr. 99, p. 45.] *E. K.*

Alpinia malaccensis and A. nutans R.—One of the objects of the researches constantly carried on in the laboratory of agricultural chemistry of the Botanical Garden at Buitenzorg, conducted under the directorship of Dr. van Romburgh, consists in finding new plant products and among them essential oils which may be useful in industry and the arts. To former results of this steady work, some recent ones have been added. Of these we notice the following report on the oil of *Alpinia malaccensis* Rosc. The rhizomes of this *Zingiberacea*, growing wild in the neighborhood of Buitenzorg and called "*Ladja goah*", yield on distillation about 0.25 per cent. of a colorless oil with an agreeable odor and the sp. gr. of 1.039 to 1.047 at 27°. It is slightly dextrogyrate (0.25° to 1.5° in a 200 mm. tube) and

solidifies almost entirely when slightly cooled. The solid substance is the methyl ester of cinnamic acid, in this case met with for the first time in an essential oil. The oil has a slight by-odor recalling that of borneol. The leaves of this plant also yielded an essential oil rich in methyl-cinnamate.

Cinnamic acid-esters are very likely also contained in the oil of *Alpinia nutans* Rosc., because the fraction of this oil, passing over at 255° to 265°, yielded upon saponification an acid, melting at 134°, which doubtless is identical with cinnamic acid.

[Report of Schimmel & Co., Apr. 99, p. 46.] *E. K.*

Hydrocyanic Acid in Plants.—To the list of plants known to contain hydrocyanic acid, the following have been added by van Romburgh of the Buitenzorg Garden, Java.

Passiflora laurifolia L, *P. hybr. Imp. Engénie*, *P. princeps* Lodet, *Tasconia spec.*, all of the Nat. Ord. *Passiflorae; Plectronia dicocca* Brck., Nat. Ord. *Rubiaceae; Prunus javanica* Mic., Nat. Ord. *Amygdaleae.*

The two last named plants contain at the same time hydrocyanic acid and benzaldehyde. The latter alone, with some methylsalicylate and sometimes with traces of salicylicaldehyde, was found to be contained in the leaves of *Homalium tomentosum* Benth., (*Samydaceae*); and also in two species of *Memecylon.*

[Report of Schimmel & Co., April '99, p. 47.] *E. K.*

Cananga Oil.—Schimmel & Co. have received from Goethart & Co., pharmacists at Samarang, Java, two specimens of cananga oil, the one distilled from green, the other from yellow flowers of *Cananga odorata.* The constants obtained are:—

1. Oil from green flowers. Sp. gr. 0.930 at 15°; opt. rot.—19° 21′; saponification number 24.31. Not soluble in 10 parts by volume of 95 percent. alcohol.

2. Oil from yellow flowers. Sp. gr. 0.956 at 15°; opt. rot.—25° 11′: at 18°. Insoluble in 10 parts by volume of 95 percent alcohol.

The latter has a striking odor of eugenol. By agitating this oil with solution of sodium hydrate, 12 percent. of this phenol were obtained. This could readily be converted into benzoyleugenol by the action of benzoyl chloride. After the removal of the eugenol the oil had the following properties:—

Sp. gr. 0.929 at 15°; opt. rot.—29° 45′ at 17°; saponification number 31.2. Insoluble in 10 parts by volume of 95 percent. alcohol.

Both oils are in their odor far inferior to the oils distilled at Manila.

[Report Sch. & Co., Apr. '99, p. 9.] *E. K.*

Chione Oil.—The various species of *Chione* (Family *Rubiaceae*) are almost exclusively indigenous in the West-Indies; of these the best known species is *Chione glabra*, called "*Violette*" and *Palo blanco* on Porto Rico.

The fresh wood and still more the bark of this tree have an aromatic somewhat fecal smell, which gradually disappears on exposure to the air. According to Paul and Cownley[1] the bark yields upon distillation with steam 1.5 percent of a light-yellow oil, which is heavier than water and upon cooling to —20° solidifies to a mass of acicular crystals. It exhibits the peculiar odor of the bark and has been investigated by Dunstan and Henry[2]. The oil consists mainly of a fluid constituent solidifying at a low temperature and boiling at about 160° under 34 mm. pressure; it has the sp. gr. $d\frac{15^0}{4^0} = 0.850$ and the formula $C_8H_8O_2$. The odor of this constituent is exactly that of the oil; when it is acted upon by acetic anhydride, an acetic ester is formed: and with hydroxylamine and phenylhydrazine compounds result which admit the inference that a carbonyl group is present. When fused with an excess of potash, salicylic acid and as a product of further decomposition phenol is obtained. When treated with nitric acid, picric acid is formed. All these reactions indicate that the chief constituent is o-oxyacetophenone C_6H_4 (OH) CO $CH_3 = 1:2$. A compound obtained synthetically from o-nitrocinnamic acid proved to be identical with that isolated from the oil.

Besides this compound $C_8H_8O_2$, the oil contains another colorless and crystaline substance, melting at 82°, which perhaps may be an alkyl derivative of the former. On account of its small quantity, it could not be more closely investigated. The volatile oil furthermore contains traces of nitrogenous constituents, but the authors could not obtain evidence of the presence of indol or prepare derivatives thereof, although the odor of the raw material points to their presence.

[Report Sch. & Co., Apr. '99, p. 12.] *E. K.*

Practical Pharmacy.

The Assay of Belladonna Leaves and some of their Preparations.—Frank X. Moerk verifies the experiences of others with the Keller assay method when applied to belladonna leaves. He adopts a method similar to that of A. W. Gerrard* wherein the drug is extracted by percolation with a mixture of alcohol 2 volumes and water 1 volume. This percolate is evaporated, the residual extract exhausted with acidulated water and from the acid solution the alkaloid extracted with ether-chloroform. The titration is conducted in the usual manner. The following results are given:

English cultivated belladonna, Allen's, made up mostly of belladonna leaves, a few stems and numerous mature and immature flowers, assayed 0.602 p. c.

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[1] Pharmac. Journ. (London) IV. 7 (1898), 51.
[2] Journ. chem. soc. 75 (1899), 66.
* Pharm. Journ. [3], 21, p. 212; also 22. p. 213.

German cultivated drug, consisting chiefly of leaves, few stems, flowers and some rather immature fruits, having apparently been collected during the middle of summer, assayed 0.510 p. c.

German wild drug, made up of leaves, numerous stems, even showing indications of the entire plant having been collected, and many mature fruits, therefore collected later than the preceding specimen, assayed 0.5 p. c.

Assay methods for belladonna extract and plaster are also given.

[Am. J. Pharm., 71, p. 105.] *W. A. P.*

Some Shorter Processes for the Production of Pharmacopœial Preparations.—F. W. E. Stedem offers suggestions for changes in the manufacture of various official preparations.

Tincture of Asafetida, to be made by percolation instead of maceration, economizing in time and number of utensils employed.

Tincture of Calumba. The oft repeated objections to the U. S. P. process are avoided by not moistening the No. 20 powder which is packed loosely in the percolator.

Tincture of Guaiac and **Ammoniated Tincture of Guaiac.** Both can be prepared within several hours. The seven days required by the pharmacopœia are not at all necessary.

Tincture of Iodine is prepared by percolation, employing a glass funnel with a cotton plug, covered with filter paper.

Tincture of Myrrh is recommended to be prepared by percolation, for the same reasons given under tincture of asafetida.

Camphor Water is recommended to be prepared by simply allowing distilled water to stand in contact with pieces of camphor weighted so that they remain on the bottom of the container. Inasmuch as several days are required for saturation, this process can scarcely be designated as "shorter" than that of the U. S. P. [Am. Jour. Pharm., 71, p. 162.] *W. O. R.*

Syrup of Hydriodic Acid.—F. W. Haussman argues for the retention of the syrup in the Pharmacopœia, on the grounds that it is as stable as any manufacturer can produce it. In the preparation of the syrup an increase in the amount of tartaric acid is asked for. (The latter has been increased in the U. S. P. 1890 series D to fourteen grammes to overcome the difficulties mentioned by Mr. Haussman, who probably had a copy of the series letter A, B, or C. The correction is found in those of the series D.) The increase (0.5 gm.) in the amount of potassium iodide would obviate the tedious washing now necessary to insure a 1 p. c. solution. The syrup: preservation, restoration, description and percentage estimation are also minutely discussed. [Am. Jour. Pharm., 71, p. 121.] *W. O. R.*

Examination of Some Official Fluid Acids.—Various commercial products were examined by several persons who obtained the following results.

Acetic Acid. R. T. Berry. In twelve specimens all left residues upon evaporation. The percentage strength varied from 31.5 p. c. to 50.6 p. c. The following impurities were found in one or more samples: hydrochloric, sulphuric, sulphurous and formic acids. Copper and lead were absent in all samples.

Diluted Hydrobromic Acid. D. K. Bishop examined ten samples for percentage strength and found variations from 10.1 p. c. to 15.0 p. c. absolute ("real") hydrobromic acid.

Diluted Hydrochloric Acid. S. H. Brewton estimated the absolute hydrochloric acid in ten samples of commercial diluted hydrochloric acid, and found variations from 3.70 p. c. to 11.40 p. c.

Diluted Hydrocyanic Acid. C. R. Middleton obtained five samples, but one of which had been kept in a colored bottle and none in cork stoppered bottles. The amount of absolute hydrocyanic acid varied between 1.30 p. c. and 2.80 p. c.

Diluted Hypophosphorous Acid. R. L. Haus found decided discrepancies between the alkali (total acidity) and the permanganate (hypophosphorous acid) tests; in five specimens examined, however, all were within the 2 p. c. limit of the U. S. P. Variations in the hypophosphorous acid were between 9.00 p. c. and 16.00 p. c.

Lactic Acid. W. R. Bready Jr. examined four samples of lactic acid. None contained sarcolactic acid, iron or lead. All contained sugars; and sulphates, excess of chlorides and glycerin were found in one or more samples. Two were of the required percentage strength (75 p. c.); the other two were 73.9 and 74.8 p. c. respectively.

Diluted Phosphoric Acid. T. S. Schlauch examined twelve samples, varying between 5.00 p. c. and 24.00 p. c. in absolute phosphoric acid present. All were free from nitric and phosphorous acids. Chlorides, sulphates and phosphates of the heavy metals were present in four samples.

Sulphuric Acid. E. A. Troth. Seven samples were examined. Among the impurities found were nitrous acid (2 samples), hydrochloric acid (3), lead sulphate (1). Arsenic, copper and iron were absent from all samples, while three samples contained no impurities. The amount of absolute sulphuric acid found was between 79.39 p. c. and 98.06 p. c.

Aromatic Sulphuric Acid. C. W. Beyerle examined twelve samples, and not one was found of the required strength of official sulphuric acid. The smallest amount found was 9.72 p. c. and the largest 16.41 p. c. The Pharmacopœia calls for 20 p. c. of official sulphuric acid.

Sulphurous Acid. J. E. Coleman found probably the greatest variation of all acids examined in the series. Eight samples showed variations from 0.002 p. c. to 4.300 p. c., whereas the U. S. P. requires 6.4 p. c. of SO_2. All showed the presence of sulphuric acid and left residues upon evaporation.

[Am. Jour. Pharm., 71, p. 141.] *W. O. R.*

Syrupus Pruni Virginianae (Acetous).—J. P. Remington suggests the use of dilute acetic acid in the preparation of syrup of wild cherry bark in order to decrease the percentage of tannin. The following process is suggested. Wild cherry bark in No. 20 powder (150 gm.) is moistened with 50 cc. of diluted acetic acid, and macerated for 24 hours in a closed glass or earthenware vessel, then packed firmly in a cylindrical non-metallic percolator and menstrum poured on and percolation allowed to proceed until 450 cc. of percolate are obtained including the glycerin (150 cc.). (The "observed" addition of glycerin, by placing it in the receiving vessel, is not evident, as Mr. Remington does not state whether it is added first and then 450 cc. of percolate collected altogether or 450 cc. of percolate alone making a total of 600 cc. of percolate. The former is accepted as the more probable of the two.) The sugar (700 gm.) is dissolved in the percolate by agitation without heat, the solution is strained and enough diluted acetic acid passed through the strainer until the product measures 1,000 cc.

The dilute acetic acid if found objectionable may be diluted with an equal volume of water. [Am. Journ. Pharm., 71, p. 209.] *W. O. Richtmann.*

Japan Wax as a Substitute for Beeswax in the Official Ointments and Cerates.—Robt. C. Pursel who has frequently come in contact with Japan wax recommends it very highly as a substitute for beeswax for pharmaceutical purposes, because of its cheapness; of its nonliability of adulteration (and ease of detection if adulterated), and of its efficiency in ointment making. Six parts of Japan wax are the equivalent of ten parts of beeswax yielding preparations of the same consistency. Numerous ointments (simple, zinc oxide, rose water, tar) and cerates (simple, camphor, cantharides, lead subacetate and resin) were prepared according to the U. S. P. formulae, and also by substituting the equivalent amount of Japan wax. In the case of the ointments, less color was present in those prepared with Japan wax because this substance resembles white wax in color. Besides this difference no variations in consistency, keeping qualities and medicinal value were noticed in the ointments and cerates prepared from the two bases. [Am. Jour. Pharm., 71, p. 217.] *W. O. R.*

The United States and British Pharmacopoeias.—C. B. Lowe gives an interesting comparison regarding the U. S. P. (1890) and the B. P. (1898). The comparison is taken up as follows: *a*, authority issuing the book; *b*, manner of obtaining the revision committee; *c*, appearance of the book; *d*, tabulation of general classes of preparations; *e*, strength of preparations; common to both books; and *f*, systems of weights and measures employed. The main conclusion to be drawn from the comparison is that the U. S. P. (1890) compares very well with the B. P. (1898) even though the latter appeared 5 years later than the former.

[Am. Jour. Pharm., 71, p. 223.] *W. O. R.*

New Remedies.

Acoine. — Under this title v. Heyden of Radebeul has introduced the alkyl-oxy-phenyl-guanidine, more particularly "*Acoin C*" which is di-para-anisyl-mono-para-phenetyl-guanidin-hydrochlorid. According to the experiments of Trolldenier this remedy possesses local anæsthetic powers equal to those of cocaine without exhibiting any irritant effect. Acoine must be applied in weak solution as in the concentrated condition it acts as a caustic. A solution of acoine 0.1 gm., sodium chlorid 0.8 gm., 100 gm. distilled water, when injected subcutaneously in the desired region, will produce anæsthesia lasting 50 minutes.

[Phar. Centralh. 40, p. 71, from Therap. Monatsh. 13, p. 36.] *V. C.*

Antipyreticum "Riedel". — Owing to the existing copyright on the title "Antipyrin" held by the Höchster Farbwerke, J. D. Riedel of Berlin is preparing di-methyl-phenyl-pyrazolon (antipyrin) under the above title. During the last six months the price has fallen from 102 marks ($25.50) to 14 marks ($3.50) per kilogramme. [Phar. Centralh. 40, p. 71.] *V. C.*

Petrovasine.—A petroleum preparation.

[Phar. Centralh. 40, p. 71.] *V. C.*

Silberol is Para-sulfo-phenol-silver.

[Phar. Centralh. 40, p. 71.] *V. C.*

Seraphtin. — A serum prepared by the Höchster Farbwerke, which is intended to immunize animals against "foot-rot."

[Phar. Centralh. 40, p. 71.] *V. C.*

Formaldehyd-Tanninalbuminate.—In order to prevent the decomposition of tannin albuminate from taking place before reaching the intestinal tract, it is subjected to the action of formaldehyde which effectually protects it from the action of the acid gastric secretions. Decomposition takes place then in the intestines with liberation of all of the three constituents.

[Phar. Centralh. 40, p. 72.] *V. C.*

Collargolum.—A commercial title for Credé's soluble colloidal silver.

[Phar. Centralh. 40, p. 102.] *V. C.*

Ferrhæmin "Hertel". — A liquid iron preparation made from fresh ox-blood. It is stated to contain 4.75 percent of albumin and 0.124 percent of iron as albuminate, with the addition of 20 percent of wine as preservative agent. Dose from one teaspoonful to two tablespoonfuls.

[Phar. Centralh. 40, p. 76.] *V. C.*

Seroarsenic. — A mixture of serum and sodium arseniate which is employed in the treatment of tuberculosis. Berlioz administers to daily doses of 30 gm. each in form of clyster.

[Zimmer & Co.'s Bericht, Feb. '99.] *V. C.*

Para-Acet-amido-phenoxyl-acetamid $C_6H_4\begin{cases}NH.COCH_3\\OCH_2.CONH_2\end{cases}$.—According to Fuchs and Koch this compound possesses antipyretic properties equal in intensity to those of antipyrin; in addition a sedative effect exceeding phenacetin. A more active sedative is a chloral combination of the above.

[Zimmer & Co.'s Bericht, Feb. '99.] *V. C.*

Rheumatol.—A proprietary Linimentum Juniperi Compositum.

[Phar. Centralh. 40, p. 123.] *V. C.*

Physiology.

Syntheses in the Purine Group.—In a very interesting article, Emil Fischer summarizes the work accomplished during eighteen years by him and his disciples in that group of substances which he calls the purine group and to which belong uric acid, caffeine, theobromine and a host of related natural and artificial substances. The article is an exceedingly interesting one, but does not bear abstraction; the final brief chapter, however, on the physiological and pharmacological significance of the chemical observations recorded is herewith reproduced in translation.

"Of the synthetic results described, the experimental proof that uric acid and the xanthine substances are derivatives of the same nucleus is of biological importance; for the modern teaching that uric acid is formed from the nucleines, respectively from the purine substances contained therein, finds new support. Furthermore, some of the formerly so expensive bases, such as heteroxanthine, adinine, hypoxanthine, paraxanthine and theophylline, have been made more accessible by artificial preparation. Finally, the synthetic disclosure of the group has brought out a large number of compounds, the biologic examination of which may bring about a better understanding of the metamorphosis of the natural purines in the animal organism.

"The hope that physiological chemists would not hesitate to avail themselves of this new material has been realized sooner than could have been expected. The recent 'Investigations concerning the physiology and pathology of uric acid in mammalia' by O. Minkowski (Archiv f. exp. Pathol. u. Pharmakologie 41.); also the remarkable observation by Krueger and Salomon (Zeitsch. f. physiol. Chem. 26, 389.) that epiguanine is identical with the synthetically prepared 7-methyl-guanine, clearly prove this.

"Inasmuch as several members of this group, caffeine and theobromine, are valuable medicaments and articles of food, it is to be expected that some of the new compounds may before long be added to our materia medica. In fact, O. Schmiedeberg, of Strassburg, has already begun the pharmacological investigation of the new compounds. If finally the endeavors of the firm of C. F. Boehringer and Soehne, in Waldhof near Mannheim, to make the syntheses of caffeine and theobromine of technical value, should prove successful, organic chemistry would be suppled with a number of cheaper purine substances as crude material for farther investigation of this group."

[Ber. 32, p. 435.] *E. K.*

Electrolytic Constituents of Blood Serum.—Bugarszky and Tangl have studied the electrolytic properties of the blood serum of mammals and find that three-fourths of the total dissolved molecules are electrolytes. Seventy-five per cent of all dissolved molecules are inorganic, and the osmotic pressure of blood serum in great part is due to inorganic salts. By far the largest inorganic constituents is sodium chloride and its ions.

[Naturwiss. Rundschau 14, p. 24, from Pflügers Archiv f. Physiol. 72, p. 531.] *R. H. T.*

Juice of Fungi in Snake Poisoning.—Having previously found that certain ferments and tyrosin are capable of acting as antitoxins to the venom of vipers, C. Phisalix finds that that juice of various species of fungi, both edible and poisonous, has when injected the same immunizing power. The material employed in over two hundred experiments was obtained from cultivated mushrooms, as these are most easy to procure. Equal weights of finely cut mushrooms and of chloroform water were macerated for twenty-four hours and then filtered; the filtrate, preserved by the addition of a few drops of chloroform, was then used as a vaccine. This substance was not in itself harmless, and in large doses even caused death. In spite of all antiseptic precautions, it often caused mortification of the tissues, unless filtered through a Chamberland filter, or sterilized by boiling. The immunizing effect of the injections was, however, in the case of guinea-pigs very marked, and was increased by repetition on the same subject at an interval of fifteen to twenty days. The immunity thus acquired lasted for from fifteen days to a month.

[Pharm. Journ. 62, p. 315; from C. r. 127, p. 1036.] *E. K.*

Value of Eucalyptus Oils.—W. J. Brownscombe dissents from Benjafield's statement that oils distilled from other kinds of eucalyptus than *E. globulus* are comparatively useless. Such a statement, he contends, is utterly without foundation in fact, oils on the market from other species frequently answering the tests of the new pharmacopœia even more closely than the oil of *E. globulus*, as well as containing a larger percentage of eucalyptol. Certain oils from *E. g.*, in fact, will not respond to the official test, and are therefore as certainly excluded by the pharmacopœial requirements as the oils of other species. The pharmacopœial committee has ignored the geographical sources of eucalyptus oil as a matter of importance, and considering the widely differing sources from which the oil is obtained—and the consequent variations of season, soil and climate—it is little wonder that there should be variations in the product of one and the same species of eucalyptus.

[Ph. Journ. 62, p. 227; from Lancet, 3940, p. 632.] *E. K.*

"Cupric Electrolysis" in the Treatment of Ozena.—The New York Medical Journal of April 15 contains a note on this subject in which the experience of P. M'Bride, who published an article on this method of treating ozena in the March number of the Edinburgh Medical Journal, is discussed. M'Bride regards "cupric electrolysis" as a very valuable therapeutic resource, probably the most valuable that has yet been suggested for ozena.

The following paragraph is taken from the New York Medical Journal.

"Precisely what takes place in the process termed 'cupric electrolysis' is not easy to explain or, for that matter, to understand. It is probable, however, that the chief occurrence, from the therapeutical point of view, is the formation of copper compounds which, owing to their nascent state, have medicinal virtues that one might seek for in vain in our ordinary preparations of copper. The procedure itself, as employed in the treatment of ozena, is simple enough. A copper needle connected with the positive pole of a galvanic battery is inserted into the inferior or the middle turbinated body, another needle (of platinum or steel) connected with the negative pole is passed into the saepturn, and a current of from three to ten milliampères is turned on and allowed to pass for about ten minutes."

It may be well to point out that what takes place in this treatment is that copper is dissolved from the copper needle; and, no doubt, if the process were continued long enough, that metal would be carried over and deposited on the platinum or steel needle. According to Faraday's law of electrolysis a current of ten milliampères will in ten minutes take 0.00197 gram of copper from the copper needle, a small amount to be sure. Of course as the copper leaves the needle it forms compounds. These compounds are, according to the theory of electrolytic dissociation, dissociated forming copper in the so-called ionized condition. It seems very probable that the effect produced is due to these copper ions, for that they are very powerful in their physiological action has been demonstrated repeatedly by various investigators.

[N. Y. Med. Journ. 69, p. 530.] *L. Kahlenberg.*

Literary.

Books and Pamphlets Received.

P. Blakiston's Son & Co.—Philadelphia. The newer remedies including their synonyms, sources, methods of preparation, solubilities, incompatibles, medicinal properties, and doses as far as known, together with sections on organo-therapeutic and indifferent compounds of iron. A reference manual for physicians, pharmacists, and students by Professor Virgil Coblentz. Third edition. revised and very much enlarged. One vol., pp. 147. 1899. $1.00.

Verlag von Wilhelm Engelmann — Leipzig. Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten besonders der Nutzpflanzen. Unter Mitwirkung zahlreicher hervorragender Fachgelehrten begründet von A. Engler und K. Prantl, fortgesetzt von A. Engler, Professor der Botanik und Direktor des botanischen Gartens in Berlin. Bde. 1—12. 1887—1899.

Verlag von S. Hirzel—Leipzig. Einführung in die praktische Nahrungsmittelchemie. Von Dr. H. Thoms and Dr. Ernst Gilg. Ein Bd., pp. 415, mit 115 Illustrationen. 1899. $2.75.

W. B. Saunders—Philadelphia. Practical materia medica for nurses with an appendix containing poisons and their antidotes, with poison emergencies; mineral waters; weights and measures; dose-list; and a glossary of the terms used in materia medica and therapeutics by Emily A. M. Stoney. One vol., pp. 306. 1899. $1.50.

Verlag von Julius Springer—Berlin. Hager's Handbuch der pharmaceutischen Praxis für Apotheker, Aerzte, Drogisten und Medicinalbeamte. Unter Mitwirkung von Max Arnold—Chemnitz, G. Christ—Berlin, K. Dieterich—Helfenberg, Ed. Gildemeister—Leipzig, P. Janzen—Perleberg, C. Scriba—Darmstadt, vollständig neu bearbeitet und herausgegeben von B. Fischer — Breslau und C. Hartwich — Zürich. Dritte Lieferung: *Ammon. nitr.* bis *Arsenum* pp. 273—400, mit zahlreichen in den Text gedruckten Holzschnitten. 1899. Erscheint in höchstens 20 Lieferungen @ M. 2.00.

N. Y. Botanical Garden—New York City. Bulletin, vol. 1, No. 4, pp. 171—294, with plates 3—8. April 1899.

Author—Cincinnati. A study in pharmacy: References to capillarity, pp. 149—164.

Author—Madison, Wis. Goldschmidtite, a new mineral. By William H. Hobbs. Pamphlet, pp. 8. Reprinted from The American Journal of Science.

Author—Cincinnati. The war tax. Its objects, defects and wrongs—The changes which should be made in order to render the act less burdensome and more equitable. By Prof. John Uri Lloyd. Leaflet, pp. 6. Reprinted from Bulletin of Pharmacy.

Reviews.

DIE NATÜRLICHEN PFLANZENFAMILIEN NEBST IHREN GATTUNGEN UND WICHTIGEREN ARTEN BESONDERS DEN NUTZPFLANZEN. Unter Mitwirkung zahlreicher hervorragender Fachgelehrten begründet von A. Engler und K. Prantl, fortgesetzt von A. Engler, Prof. der Botanik und Direktor des botan. Gartens in Berlin. Bd. 1—12. 1887—1899. Verlag von Wilh. Engelmann in Leipzig.

The publication of this great botanical work was commenced in 1887. The 26 parts, comprising 6 volumes treating of the phanerogamous plants, have just been completed, while 2 volumes of the cryptogamous plants have appeared leaving only a comparatively small part of the work unfinished. The work is well known and universally used and appreciated by the botanists of all countries as well as by the friends and students of the plant world, and needs no further commendation. By frequent reviews of the same in the volumes of this journal our readers are familiar with its value and merits.

On a comparison with the preceding similar works, particularly with Endlicher's "Genera plantarum" (1836 to 1850), the "Traité de botanique" by Le Maout, the "Histoire des plantes" and "Dictionaire botanique", both by Baillow, and finally Bentham and Hooker's "Genera plantarum", it will be found that the "Pflanzenfamilien" excells these works not only by greater thoroughness and superb illustrations, but also in scope, for it embraces a far greater number of plants than any preceding work. This is easily explained by the fact that the botanical explorations in several parts of the world in recent years have largely added to the stock of our knowledge of the flora of the globe.

The "Pflanzenfamilien" are a thoroughly modern work. While the former compends of this kind were elaborated by only one or two authors and therefore perhaps had the advantage of a real or apparent greater uniformity of diction and style, the German codex is the result of the co-operation of not less than 57 well known eminent botanists under the direction of the chief editor Prof. Dr. Engler in Berlin. It may safely be said that the "Pflanzenfamilien" will for one generation at least, and probably much longer, remain the standard work on the vegetation of the earth, regardless of language and nationality. It is the most complete and comprehensive record of the plant-world. Bentham and Hooker's "Genera Plantarum",

its most recent predecessor, recorded 7316 genera, Engler and Prantl 8218, an increase of 902 genera since 1883, due mainly to recent discoveries of new plants and partly to a correcter systematic specialisation of the plants known.

Having been issued in fascicles (the phanerogamous plants in about 160) during the 10 years of the publication of the work, its users were confronted with the difficulty of readily referring for information on particulars in the immense material. This obstacle has been removed by an additional volume consisting of an elaborate alphabetical index of 459 double-column pages, comprising the names of all genera and species pointing to the volume, parts and page. This most comprehensive and complete index greatly facilitates the use of the work both for ready and prompt reference and for study.

The designation of being a modern work may well be applied to this book for another reason. While preceding works of this kind were prepared for the use of professional botanists only, this one is written in so plain and lucid a style and with full consideration of the practical and economic use of every useful plant that it is of equal value to students and friends of botany, as well as to those engaged or interested in, arts, trades, industries, commerce etc. In print, paper and general make-up the work is of great excellence and the numerous heliogravures and many thousand illustrations are of unrivalled accuracy and beauty. They are a great credit to German art and to the authors and the publisher. *Fr. Hoffmann.*

EINFÜHRUNG IN DIE PRAKTISCHE NAHRUNGSMITTELCHEMIE. Von Dr. H. Thoms und Dr. Ernst Gilg. Ein Bd., pp. 415, mit 115 Illustrationen. Verlag von S. Hirzel in Leipzig. 1899. $2.75.

Among the several works treating of the examination of foods and the common commodities used for culinary and domestic purposes including beverages, drinks, confectionery etc., the compends of Koenig and of Fr. Elsner, repeatedly reviewed in the pages of this journal, have so far been the ones most appreciated and used. Prof. H. Thoms and Prof. E. Gilg of the University of Berlin have now added a new book of a somewhat more restricted scope aiming at rendering an introductory guide to this kind of analytical and microscopical application to the subject of foods. The book is designed for well trained chemists familiar with the methods and practice of chemical and microscopical research. It is divided into two parts,

one treating of the chemical examination, the other of the microscopical one. In both particular care is devoted to the methods, appliances and apparatus used, and their description by word and illustrations is as concise as it is to the point and instructive. In this direction mainly lies the particular aim of the authors and the value of the work. All the common foods and beverages and materials used for such and the most recent and approved methods of their examination have been taken into consideration.

The make-up of the book is in every respect an excellent one and it is deserving of the most favorable acceptance and of a wide use by all who are interested and engaged in this particular domain of applied chemical and microscopical research. *Fr. H.*

A Text-book of Volumetric Analysis with special reference to the volumetric processes of the Pharmacopœia of the United States. Designed for the use of pharmacists and pharmaceutical students by Dr. Henry W. Schimpf. Third edition, revised and enlarged. One vol., pp. xxix, 522, with fifty-nine illustrations.

The fact that this work has gone through three editions in comparatively short time would seem to indicate that it has been found serviceable by others as well as by pharmaceutical students for whom it was primarily intended. The present edition is divided into four parts. Part I. contains chapters on volumetric apparatus and their use, on the volumetric solutions and indicators, and then treats of the various forms of analysis with special reference to their pharmacopœial application.

In Part II. a list of inorganic substances of medicinal import are enumerated and methods given by which their strength or purity can be determined. This part is new.

Part III. includes sanitary analysis, and the analysis of organic medicinal substances by volumetric methods. This part also has two chapters on the volumetric assaying of vegetable drugs and of surgical dressings.

Part IV. contains several easily performed gasometric methods and is Part III. of the former edition unchanged.

Instructors, who do not teach volumetric analysis until the students have had at least a year's work in general chemistry, must be struck by the a-b-c methods of instruction employed especially in that part which has special reference to the Pharmacopœia. Inasmuch

as most pharmacy students of this country do not enjoy a thorough laboratory course in chemistry before taking up work of this nature, the method of treatment is no doubt justified. The attempt to make use of nothing but the simplest possible explanation is e. g. strikingly illustrated in the reactions indicating the decomposition of the organic salts to carbonates. Whether it is necessary to teach errors to make students understand may be considered a doubtful expedient. Yet this is almost generally done in most of our text-books. The physical chemist will further find fault with the non-scientific discussion of indicators. Yet it may be considered doubtful if most of the students for whom the book is intended would grasp the idea of ionic dissociation and the role it plays in volumetric analysis. Specialists of one class or another will, no doubt, find other faults in the various chapters, yet it may be doubtful if many of them would write a book more serviceable for the classes of students for whom this is intended. *E. K.*

LEHRBUCH DER ALLGEMEINEN CHEMIE von Wilhelm Ostwald. Zweite umgearbeitete Auflage. II. Band, 2. Theil; Dritte Lieferung, Bogen 27—28, Mit Figuren 33—70, Preis M. 4.60; Vierte Lieferung, Bogen 39—52, Mit Figuren 71—152, Preis M. 5.40. Wilhelm Engelmann, Leipzig. 1899.

We have here two further installments of Prof. Ostwald's monumental work on physical or — as he chooses to call it — general chemistry. These pages conclude the second chapter devoted to the general consideration of chemical equilibrium and to cases of equilibrium of the first order. The subject of chemical equilibria of the second order is then taken up in the third chapter, which covers the remainder and by far the larger number of the pages before us. It has been announced that the next (fifth) installment will complete the consideration of equilibria of the second order and that of those of higher orders, thus finishing the second part of the second volume. The consideration of equilibria in the case of electrolytes, to which so much interest attaches at present, is to form part of a further volume, — the third part of volume two.

The historical, critical method of presentation adopted by Prof. Ostwald is maintained throughout. The treatment of the subject is exhaustive and contains the salient points of all the important researches of various investigators, together with comments on their experimental methods and a critical discussion of their results.

A detailed discussion of the contents of the pages under consideration cannot be given here and, in view of the fact that the general character of the work of this illustrious author is so well known, it seems unnecessary. This encyclopaedic work of Prof. Ostwald must be studied by every earnest student of physical chemistry; and it is to be strongly recommended to students of other phases of chemistry and physics as well.

The high grade of the work of the publishers is too well known to need further comment. *Louis Kahlenberg.*

THE ELEMENTS OF PHYSICAL CHEMISTRY. By J. Livingston R. Morgan. One vol., pp. VIII+299. John Wiley & Sons, New York. 1899. 12mo. Cloth. $2.00.

The object of this book as set forth in the preface is to present the elements of the entire subject of physical chemistry in one volume, together with the important and but little known applications of it to the other branches of chemistry. The subject is treated in ten chapters, which are as follows: I. Introductory Remarks pp. 1—9; II. The Gaseous State pp. 10—54; III. The Liquid State pp. 55—68; IV. The Solid State pp. 69—73; V. Solutions pp. 74—121; VI. The Rôle of the Ions in Analytical Chemistry pp. 122—144; VII. Thermal Chemistry pp. 145—157; VIII. Chemical Change pp. 158—208; IX. Phases pp. 209—214; X. Electrochemistry pp. 215—292.

The author makes no claims of originality for the major portion of the text. The inspection of the book shows that the chapters on stochiometry are patterned somewhat after the manner in which this subject is treated by Ostwald. The treatment of the subject of chemical energy is similar to that found in Nernst's book; and the chapter on electrochemistry reminds one strongly of Le Blanc's text.

In a brief, general treatise of this kind the salient points of the various phases of the subject must be carefully selected and presented in a clear manner and in a compact form. Special care must be taken to give to each subject an amount of space commensurate with its relative importance. The book under consideration cannot be said to meet these requirements. For example, one looks in vain for a chapter on photochemistry. Nothing is said about optical activity and the use of the polariscope. But one page is accorded the subject of refraction of light. No mention is made of the use of the spectroscope. Viscosity is not treated. All of these subjects are

important from the scientific standpoint and also because of their more immediate practical applications. The author did not intend to write a book that would also serve as a laboratory guide, and yet valuable space is taken up with the description of details such as should be reserved for a laboratory manual; for example, in connection with the specific gravity of gases the correction of the barometric reading necessitated by the contraction or expansion of the materials that enter into the construction of the barometer is spoken of, and a formula for such correction is given.

The calculus is used in the derivation of some of the laws, and mathematical formulae are used throughout the book rather more freely than is usual in an elementary text.

The book is fairly well saturated with the theory of electrolytic dissociation. The special chapter on the rôle of the ions takes up nearly twice the space that is devoted to thermal chemistry, a subject of special importance. The shortcomings of the dissociation theory are not brought out. Other matters of detail concerning the mode of treatment adopted might be mentioned, but the reviewer will refrain from doing so.

While the book possesses the imperfections mentioned it will (because of the very few general texts on physical chemistry that are available in the English language) nevertheless be welcomed by many; and no doubt with a competent teacher to amplify and modify where it is necessary, the student will derive much good from the careful perusal of the text.

The work of the publishers has been well done. The paper is good, the print is clear, and the binding is neat and substantial.

Louis Kahlenberg.

WERDEN UND VERGEHEN. Eine Entwickelungsgeschichte des Naturganzen in gemeinverständlicher Fassung. Von Carus Sterne. Vierte neubearbeitete Auflage, mit zahlreichen Abbildungen im Text, vielen Karten und Tafeln in Farbendruck, Holzschnitt etc. Heft 1. Verlag von Gebrüder Borntraeger, Berlin. Vollständig in 20 Lief. zu je 1 M. od. in zwei Bänden @ 10 M. 1899.

To present to an intelligent public a well balanced account of scientific theory with regard to development and decay in the visible universe, one which shall not err upon the side of undue skepticism nor give too loose a rein to speculative fancy, must rank as one of

the most difficult tasks in popular exposition. Even that limited portion of the subject which falls within the scope of Part I. of the present treatise, which bears as a sub-title Im Reiche des Lichtstrahls calls for a wider erudition and a stronger critical faculty than appears to have been given here to its preparation and it may well be questioned whether in its present form such a work does not do more of harm than good in presenting as sound knowledge that which at best is only plausible speculation and which at its worst is all too often demonstrable error.

Reading between the author's lines one may easily surmise from numerous technical errors that his knowledge of the subject has not been acquired at first hand. His illustrations are for the most part antiquated and there is a strange neglect of recent contributions to the subject, such as the studies of Loewy and Puiseux upon the Paris lunar photographs, the work of Vogel and Scheiner in stellar spectroscopy, and the tidal researches of Darwin. In agreeable contrast to the weaker parts of the book is the account of recent work relating to the planet Mars.

A great work upon growth and decay in the universe must some time be written, but it is still a desideratum which can be supplied only by a master hand working along lines radically different from those of the present volume. *George C. Comstock.*

MAISCH'S MATERIA MEDICA. A manual of organic materia medica; being a guide to materia medica of the vegetable and animal kingdoms. For the use of students, druggists, pharmacists and physicians. By John M. Maisch, Phar. D., Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy. New (7th) edition, thoroughly revised by Dr. H. C. C. Maisch, Professor of Materia Medica and Botany in the Medico-Chirurgical College of Philadelphia, Department of Pharmacy. One vol., pp. 512, with 285 engravings. Cloth $2.50 net. Lea Brothers & Co., Philadelphia.

The last edition of this standard text book appeared in 1895. Since that time much new information has been gained regarding drugs and this opportunity has been taken to incorporate much of this information into the work. A careful comparison of this new edition with the last shows many changes in numerous details, additions being most frequently found in the paragraphs dealing with

structure and constituents. But three new drugs are included: dry thyroid, saw palmetto and eucalyptus gum. Although considerable new material is thus introduced, no increase in the size of the book is seen, the former convenient size and shape being retained. No increase in the number of illustrations has been made.

Since the book is written on an organographic system of classification, little opportunity is given to observe the facts of natural relationship. This is in part supplied by a table of arrangement of drugs according to origin. The value of this feature is seriously impaired by the continuance of an antiquated system, that of Gray's Manual. This is badly behind the times and in retaining the coniferous forms between the monocots and the dicots the author has run counter to the opinion now prevailing among systematists. In the mind of the reviewer, the time is now ripe for the acceptance, in all departments of botany, in which plants are to be classified according to their natural relationships, of the system worked out by Engler and Prantl. This system is being very generally accepted by taxonomists, and technical botany should be prompt to accept the finding of specialists when one is generally agreed upon by them.

The many good qualities of this book do not need to be mentioned in detail, since this work is so widely known. The convenience in size and form as well as the excellent get-up of the book make it an unusually attractive text. These things taken in connection with the good quality of the matter presented and the comparatively low price will assure to this book a great continued use. *R. H. True.*

VICTOR VON RICHTER'S ORGANIC CHEMISTRY or Chemistry of the Carbon Compounds edited by Prof. R. Anschuetz, University of Bonn. Authorized translation by Prof. Edgar F. Smith. Third American from eighth German edition. Volume 1: Chemistry of the aliphatic series, pp. 625, with illustrations. P. Blakiston's Son & Co., Philadelphia. 1899. $3.00.

It has been said of Kekulé that he drew out into endless chains the numerous fatty compounds and tied down to one benzene ring the host of aromatic substances. This statement is the keynote of the classification of the carbon compounds since the sixties. Kekulé, the chemical philosopher rather than a man of details, never completed his "Lehrbuch der organischen Chemie" begun in 1859 in which he tried to carry out logically his expanded notion of types in

harmony with the development of structural chemistry. One of his disciples, V. v. Richter, however, in a work dedicated to Kekulé carried out to their logical sequence the teachings of his master in a somewhat more elementary treatise. Whereas the work of the master was placed with the classical chemical treatises on the historic shelf even before the death of its author, that of the disciple lives on in several languages after the death of the younger writer. Its revision is now continued by the present director of the Bonn laboratory, a disciple of and successor to Kekulé.

This close relationship between the present German author and the father of modern structural chemistry is, no doubt, in part responsible for the adherance to traditions in the classification of carbon compounds presented in the present volume. The change of classification from 1. fatty and 2. aromatic compounds to 1. fatty, 2. carbocyclic and 3. heterocyclic compounds does not at all meet the exegencies of the present situation. In the steeplechase for the preparation of new compounds, inaugurated by the benzene theory, by means of which new light can be thrown on individual chapters or theories, general classification has been almost universally neglected. The late Victor Meyer in the introduction to his unfinished "Lehrbuch" laid down admirable principles of classification, but even he did not carry them out consistently.

As a reference book and as a general guide in advanced courses, Richter's Organic Chemistry has proven such a useful book that we gladly welcome each new edition that brings it up to date in many if not in all particulars. The change in editorship of the German edition on which this English translation is based has brought about an unusual number of changes in individual chapters. "Indeed," writes the translator, "the book has sustained very radical changes in many particulars, and certainly to its decided advantage."

The former one volume has been divided for practical reasons into two. This has the additional advantage of bringing the first part into the hands of an anxious chemical public much earlier than could otherwise be hoped for. The press work is neat and a credit to both publisher and printer. Of the various translations of German scientific text books which have emenated from the Chemical Laboratory of the University of Pennsylvania, this, the product of the labors in this direction on part of the Director, will unquestionably be the most welcome to American chemists. *E. K.*

SUPPLEMENT.

Scientific Societies.

The American Chemical Society will hold its summer meeting, as usual, in connection with the meeting of Section C of the American Association for the Advancement of Science. These meetings will be held this year in Columbus, Ohio, during the week beginning August 21. The sessions on Monday and Tuesday will be in charge of the American Chemical Society, with the exception of a short session of Section C for the purposes of organization immediately after the general meeting of the A. A. A. S. on Monday morning, and a session late in the afternoon of Monday for the purpose of listening to the address of the vice-president of Section C, Professor F. P. Venable. The other sessions of the week will be in charge of Section C.

The various papers presented by members of Section C and of the American Chemical Society will be classified under certain general topics. The distribution of these topics among the sessions throughout the week will be announced in a circular to be issued later. Persons wishing to present papers at the meeting are requested to forward at their earliest convenience the title of the same, together with the estimated time required for reading them, either to Albert C. Hale, 551 Putnam Ave., N. Y.; or to H. A. Weber, Ohio State University, 1342 Forsythe Ave., Columbus, Ohio. It would also greatly facilitate arrangements if the manuscript or a good extract could be forwarded at the same time.

Calendar of Association Meetings for June.*

State.	Date.	Place.	Secretary.
Colorado	—	Boulder	C. E. Ward, Denver.
Connecticut	23	New Haven	A. S. Clark, Waterbury.
Georgia	6	Warm Springs	C. T. King, Macon.
Illinois	6–8	Danville	F. Fleury, Springfield.
Kentucky	20	ChameleonSprings	J. W. Gayle, Frankfort.
Massachusetts	13–15	Holyoke	J. F. Guerin, Worcester.
Minnesota	21–23	Lake Minnetonka	H. Rauch, Minneapolis.
Missouri	6–10	Jefferson City	H. M. Whelpley, St. Louis.
Nebraska	6–8	Kearney	Mrs. B. Heilman, Tecumseh.
New York	27–30	Albany	J. B. Todd, Ithaca.
Ohio	—	Put-in-Bay	L. C. Hopp, Cleveland.
Pennsylvania	9	Philadelphia	J. A. Miller, Harrisburg.
Utah	—	——	C. H. McCoy, Salt Lake.

* According to Merck's Report.

Society of Chemical Industry. — Dr. Charles F. Chandler, professor of chemistry in Columbia University, New York city, and one of the best known chemists in America, was honored abroad last week by being elected president of the Society of Chemical Industry at the annual meeting of that body held in Glasgow. Dr. Chandler is the first American

chemist to be chosen to the presidency. The society is composed mainly of British chemists, enrolled as members of the following sections: Liverpool, London, Manchester, Newcastle, Nottingham, Scottish, and Yorkshire; but it has affiliated with it also a large and flourishing New York Section. The society was organized in 1881, and Sir Henry E. Roscoe was its first president. The New York Section was established five years ago.

In Memoriam.

Dr. Gustav Heinrich Wiedemann, Professor of Physics and Director of the Physical Laboratory at the University of Leipzig, has recently passed away at the age of seventy-two. Professor Wiedemann was noted both as a chemist and as a physicist. He is more commonly known perhaps as the editor of "Wiedemann's Annalen der Physik und Chemie" and as author of his great work, "Die Lehre von der Electricität", a treatise that is encyclopædic in character, containing everything of importance on the subject of electricity, the use of electricity in the arts alone being excepted. Though rather feeble for the last three or four years, Wiedemann completed a new revised and enlarged edition of this great work.

At the university of Berlin, his native city, Wiedemann received his scientific training. Among his teachers were Heinrich Rose, Sonnenschein, Joachimsthal, Dirichlet, Magnus, Dove, and Mitscherlich, whose daughter, Clara, became his wife in 1851. After serving as "Privat Dozent" at Berlin, Wiedemann occupied the chair of physics at the university of Basel, then at the polytechnic institute at Braunschweig and also at Karlsruhe. In 1871 he became professor of physical chemistry at Leipzig; and in 1887, when Professor Hankel of the same university retired from active work, Wiedemann accepted his place as professor of physics. After the death of Poggendorf in 1877, Wiedemann became editor of the Annalen that have since borne his name.

Gustav Wiedemann has done much valuable research work in both chemistry and physics. He was not only an able experimentor and industrious investigator, but also a most excellent teacher as those that have worked in his laboratory and have attended his lectures will testify. He possessed rare ability in explaining scientific phenomena in a wonderfully clear and simple manner. Though he was not an orator, yet his enunciation was perfect and his lectures were very inspiring. Many pupils of Wiedemann have become noted as scientific investigators.

As chairman of the board of examiners of pharmacists, Professor Wiedemann came into close relation with the pharmaceutical profession. Many pharmaceutical and medical practitioners have received their training in physics from this great teacher.

Professor Wiedemann was a man who was scrupulously exact and very thorough, yet he was very amiable in character and disposition. He ranks with such men as Herz, Kundt and Helmholtz, all of whom have gone before him. In the fiftieth volume of the Annalen, Helmholtz paid Wiedemann a glowing tribute. In the memories of his many pupils, coworkers and others that became intimately acquainted with him, Professor Gustav Wiedemann will ever live.

Bibliography.

Wilhelm Engelmann, Leipsic, announces under the title of *Genera Siphonogamarum* a work by Dr. C. G. de Dalla Torre and Dr. H. Harms presenting a synopsis of the spermatophytes based on Engler and Prantls' Natürliche Pflanzenfamilien. The work will contain very numerous citations of literature dealing with the taxonomy of the forms involved.

The work will appear in 10 numbers, for the large part of which the manuscript is already finished. This work will prove of great value in arranging herbaria and other objects of vegetable origin in which the natural relationship is to be regarded.

In calling attention recently to work that has been done in indexing of pharmaceutical literature, we failed to mention the very exhaustive references on the subject of capillarity published by Professor Lloyd in "A study in pharmacy".

Ginn & Co. are publishing a flora of the Rocky Mountains by Alice Eastwood in connection with the Rocky Mountain edition of Bergen's "Elements of botany"; also one of the Southern United States by S. M. Tracy in connection with the Southern States edition of the same textbook.

Die Entwickelung der organischen Elementaranalyse with fourteen illustrations by Prof. M. Dennstedt has recently appeared as one of the series of chemical and chemico technical lectures edited by Dr. Felix B, Ahrens and published by Ferdinand Enke of Stuttgart.

The "Lexikon der Kohlenstoff-Verbindungen" by M. M. Richter which is to contain 65,000 carbon compounds arranged according to their percentage composition and which has been designated the "neverfailing general index to Beilstein" is making its appearance in the "Lieferungen" form with Leopold Voss of Hamburg.

Liquid air and the liquefaction of gases by T. O'Connor Sloane is announced as just published by Norman W. Henly & Co. of New York.

CATALOGUES RECEIVED:—

J. B. Bailliere & Fils—Paris. Le Mois Médico-Chirurgical. 1899. No. 2.

F. A. Brockhaus—Leipzig. Monthly list of new books.

Ginn & Co.—Cambridge: School and college textbooks 1899.

Ernst Guenthers Verlag—Leipzig. Pharmazeutische und naturwissenschaftliche Werke.

Lemcke & Buechner—New York. Monthly bulletin of world literature. 1899, Nos. 2 and 3.

The Macmillan Company—New York. Book Reviews, May, 1899.

Speyer & Peters—Berlin. Antiquariats-Katalog. *c.* Geschichte der Medicin etc.

U. S. Dept. of Agr.—Washington. Monthly list of publications. April 1899.

Commercial.

The French Nontoxic Matches.—It is believed, by Frenchmen at least, (Pop. Science Monthly for April 1899) that the problem long sought, of finding a composition for a match head in which all the advantages of white phosphorus shall be preserved while its deleterious qualities are eliminated or greatly reduced, has been solved in the new matches which the French Government has placed upon the market. These matches are marked S. C., by the initials of the inventors, Sévène and Cahen, are made in the factories at Trélazé, Begles and Samtines, and have been well received by the public. In preparing the composition, the chlorate of potash of the old flashing and safety matches has been retained, and the sesquisulphide of phosphorus is used instead of the white or red phosphorus of the old matches. The latter substance, besides the indispensable qualities of fixity and resistance to atmospheric influences, has the two important properties of inflaming at 95° C., much nearer the igniting point of white phosphorus (60° C.) than of red (260° C.), and being therefore easier to light; and of having a low latent or specific heat. With these properties embodied in the inflammable composition of the head, the new match is expected to be comparatively free from accidental explosions during manufacture and export, to take fire by friction, and to burn steadily and regularly. The expectation has so far been fulfilled. The phosphorus compound has a special odor, in which the sulphur characteristic prodominates, but, not boiling under 380° C., does not become offensive in the shops; and the match heads made with it do not emit the phosphorescence which is often exhibited by matches made with white phosphorus. It is only feebly toxic by direct absorption, experiments on guinea pigs indicating that it is only about one-tenth as much so as white phosphorus.

REPORTS AND OTHER FUBLICATIONS RECEIVED:—

Walter Baker & Co. Ltd.—Dorchester, Mass. Cocoa and chocolate, a short history of their production and use. One vol. pp. 72.

Gehe & Co.—Dresden. 1. Handelsbericht, April 1899. Brochure, pp. 90. 2. Verzeichniss neuerer Heilmittel, mit kurzen Bemerkungen über Herkommen, Zusammensetzung und Wirkung. April 1899. Pamphlet, pp. 31.

Heinrich Haensel—Pirna a. d. Elbe. 1. Bericht über das erste Vierteljahr 1899, pp. 29. 2. Extract from quarterly report on essential oils and fruit essences. April 1899, pp. 24.

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Pharmaceutical Review.

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Editorial.

Pharmacists have often been criticised for paying percentages on prescriptions. Such criticism is just if the pharmacist can be proven guilty, but it should be made to apply to the physician as well as to the pharmacist. The former, who receives the money—who may even intimate to the reluctant pharmacist his willingness to receive such fee—is not an iota better than the person who pays the fee. That the tendency toward commercialization is as manifest in the medical profession as well as in other callings of life may appear like a truism to many. The special reason for calling attention to this well nigh irresistable tendency at the present time will be found in an editorial on the "Selling of patients" which we reprint on another page of this number.

How little attention is bestowed by society on things not sensational is manifested in man's attitude toward disease and its remedies possibly in as striking a manner as in any other phase of human activity or, sometimes more correctly, lethargy. A single case of small pox may set an entire community into commotion, whereas a form of disease that incessantly demands more victims than the most gigantic wars has received but little popular attention. Fortunately for mankind, progress does not depend on initiative by the masses, though it may often be hampered by lack of sympathy. The movement against the ravages of tuberculous diseases, which

reached another milestone during the recent International Congress at Berlin, will strike a sympathetic chord in many if not most families. Too much can not be said about this war in which science is now hopeful of acquiring the upper hand in a not distant future. We, therefore, reprint here the following brief editorial from a recent number of "The Nation":

"The great interest taken by the Prussian royal family in the recent congress at Berlin for the prevention of tuberculosis, and the message which Queen Victoria sent to it, expressing her warm approval and blessing, have been referred to by European correspondents as striking proof of the attention now given to disease problems. But it would be strange indeed if, after the revelations which have been made in recent years regarding the ravages of the deadly tubercule bacillus, sovereigns did not take an interest in the war which medical men have declared against it. If by the invasion of some savage horde more than 70,000 men, women, and children were killed in one year in Great Britain alone, it would be considered the paramount duty of the Queen and Parliament to give every minute of their time to the extermination of the invaders; all the more if it were certain that the same number would be killed every year following by the same enemy. Why, then, should not some attention be given to the enemy that slays those 70,000, even though that enemy be invisible and so small that hundreds of him could find place on the point of a needle? Germany has at present about 1,300,000 sufferers from phthisis, according to the estimate of Prof. Leyden, and 170,000 die annually from this disease. In fifteen years the United States lost over 2,000,000 by tuberculous diseases; and from figures carefully compiled for years it is known that one person in seven or eight dies in America and Europe of tuberculosis, a preventable disease if we but knew, a curable disease, no doubt, when we know more."

The Apothecary and the German "Totentaenze."

Mr. W. L. Schreiber contributed last year to the "Zeitschrift für Bücherfreunde" an article entitled "Die Totentänze", in which the apothecary (p. 330) is incidentally mentioned. In reply to a query, Mr. Schreiber, who has made a very thorough study of the entire

subject of the death dance, writes that as far as he can remember the instance mentioned in his article is the only one where an apothecary occurs in this branch of German literature. It may, therefore, be worth while to bring this literary character to the attention of those who are interested in the more general subject of the apothecary in literature; all the more so since Mr. Schreiber has had the great kindness to have the illustration and text of both apothecary and physician traced, thus enabling us to reproduce them here on a somewhat smaller scale than the original.

The apothecary appears to occur for the first and possibly only time in the Heidelberg block book which, according to Mr. Schreiber, was probably printed about 1460—70. Those who are interested in the history of block books will find an account of them in an article entitled: "Die Holztafeldrucke der Apokalypse" by the same author in volume one of the same journal. Furthermore, his presence in this edition of the death dance is due partly to an accident, in part evidently to the fact that at about this time he appeared on the scene in Germany and thus naturally attracted some attention.

What has just been termed accident was not altogether such. The moralising tendencies which had supplanted the purely dramatic character of the earlier death dance evidently made it desirable to begin the series with a preacher or two whose duty it was to admonish all classes of men. Inasmuch as the earlier forms had contained the regulation number of twenty-four pairs, the addition of two preachers to the Heidelberg edition left two blank pages which the wood engraver supplied with characters of his own invention. One of these pages is lost, but fortunately the one representing death and the apothecary has been preserved.

In order to better appreciate the treatment which the apothecary receives at the hands of death, the page representing the physician is also here reproduced. As will be seen at a glance, the apothecary is characterized by a mortar, the physician by a urine glass used for diagnostic purposes. The physician wears the long, flowing mantle of the learned profession, whereas the apothecary is clad like a tradesman. Whereas the apothecary appears robust and in full possession of the spirit and strength of youth, the physician appears rather aged, and, as his words show, is disheartened. The fact that he drops the instrument from his hand would seem to indicate that he is even frightened.

Bolher aptekeran meynen tanz
Seyn nw die spraca sichyre gang
Sy do synt medicinis nuch
Dewegst nw ewr meysterschaft
Nach kinde syrop vnd confect machen
Electuaria vnd ouch ander sachen
Der nw ere eyns zur werden tot
Sy warnuir gu dezer stunden not

To the apothecary death says:

"Wolher aptheker an meynen tancz
Seyn nw die species schyre gancz
Dy do synt wedir todis craft
Beweyst nw ewir meysterschaft."

And the apothecary replies:

"Ich kunde syrup und confect machen
Electuaria und vil ander sachen
Wer nw eine eyns gut vor den tot
Is wer mir czu deser stunden not."

The physician is addressed as follows:

"Her arczt thut euch selber rat
Ayn ewir meisterlichen tat
Ich fuere euch czu des todis gesellen
Dy mit euch hir tanczen wellen."

He replies:

"Ich habe myt meynem harnschawen
Gesund gemacht man und frawen
Wer wil als machen mich gesund
Ich byn czu deme tode wund."

That the apothecary is a later addition also becomes apparent from the differences in the figures representing death, thus e. g. the head, shoulder, hip and knee are evidently of later construction than the corresponding portions of the anatomy of the death figure accompanying the physician.

It might seem strange at first thought that the apothecary should not appear in other block books, or manuscripts, or paintings, whereas every other calling seems represented, sometimes more than once in the same series. Thus e. g. different orders of the clergy will appear as well as the different ranks of the soldiery. If, however, Mr. Schreiber has proven his thesis, viz. that the death dance was invented on German soil, the explanation is not far to seek. As Hermann Peters* cogently remarks, the historic life of pharmacy in Germany begins only with the thirteenth century. Evidence exists that there was an "Apotheke" in Muenster as early as 1267, another in Augsburg in 1285. During the next century apothecary shops were established in Hildesheim and other German cities, but they

* Aus pharm. Vorzeit [1 ed.], 1, p. 13.

evidently were not so numerous as to attract universal attention. Just when the first apothecary shop was established in Heidelberg the writer could not ascertain, but in all probability some time before the publication of the block book (about 1460) referred to above. It therefore must have attracted some local attention. The comparatively recent introduction into Heidelberg of this new institution may also account for the rather youthful appearance of the pharmaceutical representative in the block book.

Those who care to compare with the above character the French apothecary as he appeared about two centuries later in a dialogue between death and the apothecary will find the burlesque (1695) of Jacques Jacques reprinted in Phillippe: Histoire des apothicaires, pp. 337—344. *E. K.*

Acetanilid.

By *Charles W. Gorr.*

Synonyms:—

Acetanilid(e); Ger., Acetanilid; Fr., acétanilide; Lat., *acetanilidum*[1], Gerhardt[2], 1852.

Acetylamidobenzene[3] (or benzol).

Acetylaminobenzene[4] (or benzol).

Acetyl Anilin(e).[5]

Acetyl phenylamin(e).[6]

Antifebrin(e); Ger., Antifebrin; Fr., antifebrine; Lat., *antifebrinum* [*ἀντί*, against; *febris*, a fever.] Cahn and Hepp[7], 1886.

Phenylacetanilid(e).[8]

History.—With regard to the date of discovery of acetanilid there seems to exist much difference of opinion. Thus e. g. Fischer[9] and Brestowski's[10] give 1843; Weill[11], also Lyon[12] give 1845; the Natl. Disp.[13] gives 1852; Squibb[14], 1853.

In the "Grundriss der organischen Chemie" the translation by Wurtz of Gerhardt's treatise, the second volume of which was published in 1846, acetanilid is not mentioned, although formanilid, benzanilid and oxalanilid are enumerated. In the monograph on his classic *Recherches sur les acides organiques anhydres*[15] Gerhardt states

under *Acétanilide:* "Cette anilide n'avait pas encore été obtenue."* The date of publication is March, 1853, the date of research May—June, 1852. Furthermore, C. G. Williams[16], who appears to have been the first to supplement Gerhardt's work on acetanilid, mentions the year 1852 as that of its first preparation.

To the two methods of preparation by Gerhardt, Williams adds a simple method which is the one commonly employed in organic laboratories with but slight modification of details at the present time. He also mentions that Perkin called his attention to the fact that acetanilid is sometimes found in crude anilin prepared according to Béchamp's† process.

For a number of years the principal interest attached to acetanilid was theoretical only. It at once, however, came into prominence with the discovery of its antipyretic properties by Cahn and Hepp.[17] Since then it has played an important role, not only in legitimate medical practice, but also in popular medication, especially in innumerable headache medicines, and finally as an adulterant of numerous organic products.

Methods of Formation.

1. By the action of acetyl-chlorid on anilin. C. Gehardt[18], 1852.

$$C_6H_5N<^{H}_{H} + ClCOCH_3 = C_6H_5N<^{H}_{OC.CH_3} + HCl.$$

2. By the action of acetic acid anhydrid on anilin. C. Gehardt[18], 1852.

$$C_6H_5N<^{H}_{H} + O<^{COCH_3}_{COCH_3} = C_6H_5N<^{H}_{COCH_3} + HOCOCH_3.$$

Hinsberg[19] states that the acetylization of anilin takes place completely when it is shaken with an excess (1½ to 2 parts) of acetic acid anhydrid and water keeping the mixture cold with ice.

3. By heating anilin a) with glacial acetic acid.‡ Williams,[20] 1864; b) with dilute acetic acid. Tobias[21], 1882.

$$C_6H_5N<^{H}_{H} + HOCOCH_3 = C_6H_5N<^{H}_{COCH_3} + H_2O.$$

The rapidity of formation of acetanilid has been studied by Menschutkin.[22] The reaction takes place most rapidly at first and gradually diminishes. When molecular quantities are heated in sealed

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* For the French reference the writer is indebted to Professor Prescott, Chairman of the A. Ph A. Com. of Special Research.

† The reduction of nitrobenzene with ferrous acetate. Watt's Dict., vol. 1, p. 271; from Ann. chim. et phys. [3], 42, p. 186.

‡ See also U. S. patents under Methods of Preparation.

tubes at a temperature of 155°, 79.68 p. c. will be formed within 120 hours.

The speed of reaction is increased by increase in temperature (the percentage limit, however, is thereby diminished); also by an excess of either anilin or acetic acid. At a temperature of 155° about as much acetanilid (12.30 p. c.) is formed in five minutes as is formed at ordinary temperature (12.25 p. c.) within 31 days. If eight molecules of anilin are used to every molecule of acetic acid the limit seems to be reached when 97.22 p. c. are formed. When four molecules of acetic acid are used for every molecule of anilin the limit is reached at 99.80 p. c.

Although, according to Lothar Meyer,[23] pure water does not decompose acetanilid, the presence of one thousandth part of acetic acid, according to Menschutkin,[24] affects hydrolysis. This explains the low limit when molecular quantities of anilin and acetic acid are used, also the reduction of the limit by increase of temperature.

The influence of the concentration of the acetic acid has been studied by Tobias.[21] According to Menschutkin, 85 p. c. of acetanilid are formed when equimolecular quantities of anilin and glacial acetic acid are heated at 100°. There remains, therefore, 37 p. c. acetic acid with the unchanged anilin. Tobias, however, found that even a 15 p. c. solution of acetic acid will produce 18 p. c. of acetanilid within 36½ hrs.

4. By heating anilin acetate.* Fischer, B.[25] 1894.

$$C_6H_5NH_2 \,.\, HOCOCH_3 = C_6H_5N{<}^{H}_{COCH_3} + H_2O.$$

5. Treating isocyanphenyl chlorid with glacial acetic acid. Eug. Sell and G. Zierold[26], 1874.

$$C_6H_5NCCl_2 + HO\,.CO\,.CH_3 = C_6H_5NHCOCH_3 + COCl_2.$$

6. By heating acetamid and anilin. W. Kelbe[27], 1883.

$$CH_3CONH_2 + {}^{H}_{H}{>}NC_6H_5 = C_6H_5N{<}^{H}_{COCH_3} + NH_3.$$

7. By heating methyl-phenyl-ketoxime with concentrated sulphuric acid at 100°. Beckmann[28], 1887.

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* According to Beilstein [1896], vol. 2, p. 311, it would appear that anilin acetate has not been prepared in a crystalline form. Comp. also G. Tobias: Zur Kenntniss der Anilinbildung, Ber. 15, p. 2871. Inasmuch as, according to Tobias, anilin formate is converted at normal temperature to formanilid (Ber. 15, p. 2867), there is no reason to suppose that this reaction does not readily take place. In fact it must be assumed, and generally is, that anilin acetate is formed at least in large part when anilin and glacial acetic acid are mixed. It has also been shown by Menschutkin (Ber. 15, p. 1616) that this anilin acetate, obtained by mixing molecular quantities of anilin and glacial acetic acid, is gradually converted into acetanilid and water (12.25 p. c. within 31 days; 43.77 p. c. within 137 days).

$$\begin{matrix}CH_3\\C_6H_5\end{matrix}\!>\!C\!=\!NOH + HOSO_2OH = \begin{matrix}CH_3\\HOSO_3\end{matrix}\!>\!C\!=\!NC_6H_5 + H_2O$$

$$\begin{matrix}CH_3\\HSO_4\end{matrix}\!>\!C\!=\!NC_6H_5 + H_2O = CH_3CO\,.\,NHC_6H_5 + H_2SO_4.$$

8. Formylacetanilid, when treated with sodium hydroxid, is converted into acetanilid. H. L. Wheeler and Percy J. Walden[29], 1897.

$$\begin{matrix}C_6H_5N\\H\end{matrix}\!:\!\begin{matrix}(CHO)COCH_3\\ONa\end{matrix} = N\!<\!\begin{matrix}H\\C_6H_5\\COCH_3\end{matrix} + HCOONa.$$

9. By heating anilin with aceto-acetic-ester at 200—220°. St. v. Niementowski[30], 1897.

$$\begin{matrix}CH_3\\|\\CO\!-\!OC_2H_5\end{matrix} = C_6H_5N\!<\!\begin{matrix}COCH_3\\H\end{matrix} + C_2H_5OH.$$
$$C_6H_5N\!<\!\begin{matrix}H\\H\end{matrix}$$

10. By acetylizing anilin with thioacetic acid. Br. Pawlewski[31], 1898.

$$C_6H_5N\!<\!\begin{matrix}H\\H\end{matrix} + HS\,.\,CO\,.\,CH_3 = C_6H_5N\!<\!\begin{matrix}H\\COCH_3\end{matrix} + H_2S.$$

11. By heating carbanilid with acetic acid anhydrid. H. v. Pechmann and Wm. S. Schmitz[32], 1898.

$$\begin{matrix}NHC_6H_5\\|\\CO\\|\\NHC_6H_5\end{matrix} + \begin{matrix}O\\/\\\backslash\\COCH_3\end{matrix} = 2C_6H_5N\!<\!\begin{matrix}H\\COCH_3\end{matrix} + CO_2.$$

12. Rüheimer[33] in 1884 obtained acetanilid by heating malon anilid with glacial acetic acid, but the resulting compound was not identified as acetanilid until 1898 by Pechmann and Schmitz.[34]

$$\begin{matrix}H\\C_6H_5\!-\!N\!-\!C\!=\!O\\\\\\C_6H_5\!-\!N\!-\!C\!=\!O\\H\end{matrix}\!>\!CH_2 + HOOCCH_3 = 2C_6H_5N\!<\!\begin{matrix}H\\COCH_3\end{matrix} + CO_2 \text{ etc.}$$

13. By heating mono-acet-hydrazo-benzol. C. A. Bischoff[35], 1898.

$$2\begin{matrix}C_6H_5\,.\,NCOCH_3\\C_6H_5\,.\,NH\end{matrix} = 2C_6H_5N_5H\,.\,COCH_3 + \underbrace{\begin{matrix}C_6H_5N\\C_6H_5N\end{matrix}}_{\text{azobenzol.}}$$

14. By acetylizing α-brom-propionylanilid with thioacetic acid according to Br. Pawlewski[36] when formaldehyde, hydrogen sulphide and acetanilid result. Bischoff[37], 1898.

15. By treating sodium acetanilid with methylenchloride CH_2Cl_2 in xylol suspension. Bischoff[37], 1898.

Methods of Preparation.

The following two laboratory methods, one for the preparation of about 30 grams, the other for the preparation of about 120 grams of acetanilid are herewith given.

1. According to W. A. Noyes[38]: "Put in a 200 cc. flask 25 grams of anilin and 35 grams of glacial acetic acid. Place in the mouth of the flask a stopper bearing a tube 1 cm. in diameter and 50 cm. long. Heat on a thin asbestos paper on a wire gauze and adjust the flame so that the vapors of acetic acid condense about two thirds the way up the tube. As water is formed during the reaction, it will gradually escape from the top of the tube and this hastens the reaction. If the apparatus cannot be conveniently placed under a hood, the top of the tube should be bent over and a flask placed under it to collect the dilute acid which escapes. After boiling for four to five hours, pour carefully, with constant stirring, into 400 cc. of water, filter when cold and recrystallize from hot water, dilute alcohol or benzene. The yield is about 80 p. c. of the theoretical."

2. According to B. Fischer[39]: "100 pts. of pure anilin (b. p. 184—185) and 100 pts. of glacial acetic acid are kept gently boiling 1—2 days in a 500 cc. flask, provided with a reflux condenser. All the anilin is converted to acetanilid when upon the addition of dilute sodium hydroxid solution to a small portion no more anilin is separated, which can be detected by the odor. At this point the mixture is poured into a fractional distilling flask provided with thermometer and connected with a Liebig condenser.

The water formed in the reaction will be given off at first, then the excess of acetic acid and when the temperature has risen above 120° C., the condenser is replaced by a long tube (0.6 m. long, 1 cm. in diameter) and the heating is continued. The temperature quickly rises to 295 when the acetanilid distills over, being collected in another flask (Bohemian), from which it is transferred to a porcelain evaporating dish and is stirred until cooled, forming crystalline masses. A single recrystallization from hot water is sufficient to purify them. Should the resulting crystals be colored, they may be decolorized from hot water after the solution has been boiled with freshly prepared animal charcoal and filtered.

The anilin used should be free from toluidin and can be cheaply obtained, by the rectification of "anilin for blue." The yield of acetanilid is 120 parts.*"

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* About 71 p. c. This low percentage is, no doubt, explained by the investigations of Menschutkin and Tobias.

As to the manufacture on a large scale, little can or need be stated. The results of the investigations of Menschutkin and Tobias are of fundamental importance. Some of the American patents, however, are of interest inasmuch as they show on how slight provocation patents are granted in this country.

1. U. S. Patent No. 574,395[40] (1896) held by R. W. Cornelison of Bloomfield, N. J., and W. H. Warren of Brooklyn. Acetanilid is produced "directly from an acetic acid salt by replacing the acid radical of the salt with another acid radical, such as a sulphuric acid radical, and causing the acetic acid radical thus liberated to react finally with anilin." By the "reactions of an acetic acid salt and an anilin salt upon each other."

2. U. S. Patent No. 574,396[40] (1896) held also by R. W. Cornelison and W. H. Warren. A normal acetate of an alkali is converted to an acid acetate, then "causing the excess of acetic acid thus taken up and carried by the salt to react with anilin."

3. U. S. Patent No. 578,384[41] (1897) held by P. J. Austen of Brooklyn and H. C. Tuttle of New York. The anilin and diluted acetic acid are heated under pressure above or in excess of that of the atmosphere until the reaction is completed.

4. U. S. Patent No. 586,551[42] (1897) held by F. W. A. Frerichs of St. Louis, Mo. Acetic acid and anilin are subjected to distillation while agitated, the product thus obtained is subjected to distillation under reduced pressure while agitated until the greater portion of the free anilin and acetic acid have been removed, and then the remaining product is subjected to the action of live steam until all the acetic acid and anilin have been removed.

5. U. S. Patent No. 615,828[43] for the preparation and No. 615,829 for the purification, held by H. C. Fehrlin of St. Louis, Mo. (1899.) Into anilin heated to 160° C. a stream of superheated acetic acid at 185° C. is introduced until all anilin is changed, at the same time depriving the liquid of all water. For the purification, any uncombined anilin is removed by treating with overheated acetic acid vapors at 180° C.; it is then distilled under diminished pressure, heating to the boiling point of acetanilid, at the same time passing into the mixture a stream of overheated acetic acid vapors of desired strength and at a temperature not less than the boiling point of acetanilid in a vaccum. An active distillation of acetanilid results.

Purification.—The purification of acetanilid on a small scale at least, when prepared from fairly pure materials, is usually accomplished by means of recrystallization from water (Fischer, Noyes*).

Meister reports a case where pure appearing acetanilid, which, however, had a low melting point (101°) was purified by Merz and Weith[44] by extraction with carbon disulphid which dissolved a dirty substance. Recrystallized from hot water, the acetanilid then melted at 112—113°.

The separation of acetanilid from acetoluid by fractional distillation was also tried by M. & W., but with no very satisfactory results.

Yvon purified acetanilid by sublimation.[45] Compare also the various methods of preparation on a large scale.

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* loc. cit.

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[1] U. S. P. 1890, p. 4.
[2] Annalen, 87, p. 164.
[3] Nat. Disp. [5 ed.], p. 8.
[4] Ber., 28, p. 3265.
[5] Guareschi–Kunz-Krause, Das Studium der Alkaloide, p. 102.
[6] Pharm. Rundschau, 10, p. 258.
[7] Fischer, Die neueren Arzneimittel [6 ed.], p. 168.
[8] Real-Encyclopædie d. ges. Pharm., vol. 10, 590; Coblentz, The newer remedies [3 ed.], p. 1.
[9] Realencyclopædie der gesammten Pharmacie, vol. 10, p. 590.
[10] Handwoerterbuch der Pharmacie, vol. 1, p. 10.
[11] Pharm. Post, 20, p. 160.
[12] Richet, Dict. de Physiol., 1, p. 83.
[13] Fifth ed., p. 8.
[14] Ephemeris, 3, p. 1074.
[15] Ann. de chim. et de phys. [3], 37, p. 285; German translation in the Annalen, 87, pp. 57 and 149.
[16] Annalen, 131, p. 288; from Journ. Chem. Soc., 17, p. 106.
[17] Cbl. f. klin. Med., 1888, No. 33; through Ther. Monatsh., 1, p. 21.
[18] Ann., 87, p 164; from Ann. Ch. phys. [3], 37, p. 285.
[19] Ber. 23, p. 2962.
[20] Ann., 131, p. 288; from Journ. Chem. Soc. [2], 2, p. 106.
[21] Ber. 15, p. 2866.
[22] Ber. 15, p. 1615.
[23] Ber. 15, p. 1977.
[24] Ber. 15, p. 2502.
[25] B. Fischer: Die neueren Arzneimittel, [6 ed.], p. 165.
[26] Ber. 7, p. 1229.
[27] Ber. 16, p. 1200.
[28] Ber. 20, p. 1509.
[29] Am. Chem. Jour., 19, p. 134.
[30] Ber. 30, p. 3071.
[31] Ber. 31, p. 661.
[32] Ber. 31, p. 336.
[33] Ber. 17, p. 235.
[34] Ber. 31, p. 336.
[35] Ber. 31, p. 3241.
[36] Ber. 31, p. 661.
[37] Ber. 31, p. 3245.
[38] Organic Chemistry for the Laboratory, p. 86.
[39] Die neueren Arzneimittel [6 ed.], p. 166.
[40] Official Gazette, 78, p. 8.
[41] Official Gazette 78, p. 1460.
[42] Official Gazette, 80, p 369.
[43] Pharm. Ztg., 44, p. 24; from Chem. Ztg.
[44] Ber., 2, p. 432.
[45] Journ. de Pharm. et de Chim. [5], 15, p. 22.

Physical Properties.

Form, Appearance and Touch:—From water acetanilid crystallizes in white, shining laminæ with silky lustre, or rhombic plates.[1] The ratio of the axes, according to Buecking[2] (1877), is a : c = 0.848 : 2.067. From ligroin[3] it crystallizes in long needles, also from hot turpentine, paraffin oil and glycerin[4]; from benzene[5] in the form of long, broad prisms. It is unctuous to the touch.

Specific Gravity and Molecular Volume:—According to Williams[6] (1864) the sp. gr. at 10.5° is 1.099. According to Schroeder[7] (1879) who determined it in the powdered form in olive oil and reduced the result to that of water at 4°, it is 1.205, resp. 1.216, thus making the molecular volume 112.0, resp. 111.0.

Melting Point:—The following melting points have been recorded by the investigators named: 1) 112°—Gerhardt[8], 1852; 2) 112°—Wallach[9], 1876; 3) 112—113°—Liebermann[10]*, 1880; 4. 113°—Cahn and Hepp[11], 1886; 5) 112–113°—Beckmann[12], 1887; 6) 105°—Weill, 1887; 7) 123°—Flueckiger[13], 1887; 8) 112°—Helbing[14], 1887; 9) 122–123°—Pharmakopœe Commission[15], 1887; 10) 114°—Ritsert[16], 1890; 11) 114.25°—Reissert[17]†, 1890; 12) 114°—Trommsdorff[18], 1892; 13) 115–116°—Hantzsch and Freese[21], 1894; 14) 113°—Nagelvoort[22], 1897; 15) 115–116°—Pawlewski[23], 1898. Similar differences are recorded in standard chemical treatises and pharmacopœias.‡

This discrepancy is evidently attributable to impurities. Those who evidently observed on pure material, viz. Ritsert[24] and Trommsdorff[25], record practically the same result, viz. 114°. See also Reissert[26]. Inasmuch as anilin is frequently accompanied by the toluidines; and since acet anilin and the acet toluidines boil within a narrow range of temperature§, the acid toluidines may be regarded as the more common impurities.§ The influence of alkyl groups, both in the acid radical and as side-chains of the benzene nucleus, has been studied by Hodgkinson[27] and Limpach in 1893.

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* In 1880 Liebermann[19] gave the m. p. at 114—115°, but the following year[20] stated that his thermometer registered two degrees too high, thus leaving the corrected m. p. at 112—113°.

† This m. p. was determined in the ordinary way in a capillary tube. By immersing the thermometer into the substance, he found 113.85°. As congealing point he found 113.6°.

‡ Ritsert (Pharm. Ztg., 35, p. 306) records the following: 112°—Beilstein; 112—113°—E. Schmidt; 114°—Richter; 113°—B. Fischer; 112—113°—Loebisch; 112°—oesterreichische und ungarische Pharmakopœ; 122—123°, later 113°—deutsche Pharmakopœ Commission; 120°—niederlandische Pharmacopœ, also Prof. van der Burg.

§ B. Ps.: Acet anilin, 295°; o-toluidin, 296°; m-toluidin, 303°; p-toluidin, 307°.
§ M. Ps.: do. 114°; do. 107°; do. 65.5°; do. 147°.

The influence exerted by foreign substances on the melting point of acetanilid has been studied by Schneider in 1891 for antipyrin[28]; by Pruesse in 1891 for salicylic acid[29]; by Schweitzer in 1895 for phenacetin[30]; by Dietze in 1898 for vanillin[31]; and by Crompton and Whiteley in 1895 for m-nitroanilin, m-dinitrobenzene, and *α*-dinitrophenol.[31a].

Vanillin. M. P. 80–81°.			Salicylic Acid. M. P. 138°.			m-nitro-anilin. M. P. 114°.		m-dinitro-benzene. M. P. 92.2°.		*α*-Dinitrophenol. M. P. 112.5°.	
P. c. acet-anilid.	b	c	a	b	c	a	b	a	b	a	b
50	62.5°	88°	1/100	144°	154°	1/4	103.0°	1/4	85.6°	0.2148	104.3°
40	62.5°	86°	1/10	139°	150°	3/7	97.3°	2/3	80.2°	0.3683	99.5°
30	62.0°	77.5°	1/4	127°	148°	2/3	91.2°	1	75.5°	0.5733	94.4°
25	62.0°	74.5°	1/2	93°	141°	9/11	88.0°	1½	71.5°	0.8597	86.0°
20	62.5°	73.5°	1	82°	119°	1	82.7°	1⅔	70.0°	1.0000	83.3°
15	63.5°	77.5°	2	76°	82°	1⅔	83.3°	2⅓	79.5°	1.2874	79.5°
7	67.0°	78.5°	4	88°	100°	1½	85.5°	4	86.8°	1.8571	88.3°
4	69.0°	79.5°	10	91°	104°	2⅓	93.2°	9	101.1°	3.4425	97.0°
			100	107°	111°	4	99.3°			5.6667	103.4°

a = the number of molecules of acetanilid to one molecule of the other substance.

b = the temperature at which the mixture begins to melt.

c = the temperature at which the mixture is fully melted.

Mixtures of acetanilid and phenacetin in any proportion begin to melt at 92°, clearing up at 106° to 134°. Mixtures of equal parts of acetanilid and antipyrin melt at 45° and in the presence of small amounts of antipyrin, the melting point in acetanilid is lowered considerably.

*Boiling Point:**—The following data have been recorded: 1) 295°, under 755 mm. pressure—Williams[32], 1864; 2) 293°—Wallach[33], 1876; 3) 295°—Cahn and Hepp[34], 1886; 4) 292°—Weill[35], 1887; 5) 301.5° under 725 mm., and 303° (calculated) under 760 mm.

* The following list of boiling points is taken from some of the standard pharmaceutical reference works: 295°—The National Dispensatory (5th ed.), p. 8; 304° by Bernthsen, Oraganische Chemie, p. 361; 301.5° at 725 mm. and 303.80 at 760 mm.; 295°—Real Encyclopädie der gesammten Pharmacie, vol. 10, p. 590; Richter's Organic Chemistry (2nd Amer. ed.), p. 607.

pressure, with thermometer in the vapor—Pictet and Crepieux[36*], 1888; 6) 304 5—305.5° under 760 mm. pressure, with thermometer in the vapor—Perkin[37], 1895.

Volatility: — The following table shows the loss 0.5 gram of acetanilid suffered per hour when heated on a watch glass at varying temperatures.[41]

Temp.	Loss.	Temp.	Loss.
48—55°	0.00066	80—85°	0.005125
46—55°	0.00007	85°	0.018275
46—48°	0.00015	90°	0.007875
62—68°	0.00050	90—92°	0.017000
66—85°	0.00220	95—97°	0.013700
		85—90°	0.036250

Between 30—40° no appreciable loss was noticed even after heating for 48 hours.

According to Yvon† it sublimes at 90° in the form of white, light crystals.

Solubility:—Acetanilid is soluble in 189 parts of water at 6°, and in 160 parts at 15°—Cahn and Hepp[38]; in 194 parts at 15°—Fischer[39]; in 160 parts "cold" water and in 50 parts at 40°—Weill[40]; in 25 parts at 100°—Cahn and Hepp[38]; in 18 parts at 100°—Fischer[39]. Moerk[41] suggests that these differences are probably due to the fact that in the evaporation of the solvent sufficient attention was not given to the volatility of the acetanilid itself.‡

Acetanilid is further soluble in 3.5 parts of cold alcohol—Weill[40]; in 0.4 parts of boiling alcohol—Nat. Disp.[42]; in 50 parts of cognac containing 40 p. c. of alcohol—Cahn and Hepp[38]; in 6 parts ether—Weill[40]; in 7 parts chloroform—Weill[40]; in 100 parts benzene[43]; soluble also in ligroin[42]; melted phenol—Perkin[44]; but slightly in carbon disulphid[42].

Heat of Solution:—Speyers[45] determined the heat of solution,

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* According to the same experimenters, acetanilid boiled at about 292° (uncorrected) under a low barometric pressure. This evidently accounts for the differences in results by earlier observers and Pictet & Crepieux, and Perkin.

† Journ. de Ph. et de Chim. [5], 15, p. 20.

‡ According to Watt's Chem. Dist. [2 ed.], vol. 1, p. 274, only 0.34 grams of acetanilid are soluble in 100 grams of water at 14°, while 6.59 grams are soluble in a like amount at 102.5°, the boiling point, according to Friswell, of the saturated solution.

according to Nernst's method, to be: for methyl alcohol, —4477; for ethyl alcohol, —4212; and for chloroform, —4442 lesser calories.

The *Molecular Heat of Combustion* according to Berthelot and Fogh[46] is 1016 Cal., by constant volume, and 1016.8 Cal. by constant pressure; according to Stohmann and Schmidt[47], 1010.8 C.

The *Molecular Heat of Formation* according to B. and F.[46] is +52.1 Cal.; according to S. and S.[47], +51.7 Cal.

Magnetic Rotatory Power. Acetanilid is optically inactive. Its magnetic molecular rotation determined by Perkin[48] in phenol solution at 71.4° is 15.702°; reduced to 15°=16.003°.

Molecular Weight.—The weight of the simple molecule is usually calculated at 135.* The vapor density was found to be 4.8 (calc. 4.7). The molecular weight, determined in benzene and glacial acetic acid solutions according to the freezing-point method by the writer, reveals a simple molecule in both solvents.† An elementary analysis of the compound does not seem to have been recorded.

$C_8H_9NO=135.$

† No. of grams of acetanilid in 100 gms. of solvent.	Lowering of freezing point.	Molecular weight found.
In Benzene.		
0.5363	0.21	125.14
1.2366	0.47	128.38
In Acetic Acid.		
0.6818	0.19	139.9
1.2794	0.365	136.7

References to Physical Properties.

1 Jour. Am. Chem. Soc., 18, p. 142.
2 Am. Chem. Jour., 19, p. 766; from Jahresb. ü. d. Fortschr. d. Chem., 1877, p. 679.
3 Berichte, 17, p 235.
4 Pharm. Ztg., 33, p. 163.
5 Experiment by writer.
6 Annalen, 131, p. 288.
7 Berichte, 12, p. 1611.
8 Annalen, 87, p. 164.
9 ibidem, 184, p. 86.
10 Berichte, 13, p. 687.
11 Pharm. Ztg., 31, p 527.
12 Berichte, 20, p. 1509.
13 Apt. Ztg., 2. p. 410.
14 Pharm. Journ. & Trans., 47, p. 264.
15 Pharm Centrh., 28, p. 643.
16 Pharm. Ztg., 35, p. 306.
17 Berichte, 23, p. 2243.
18 Pharm. Centrh., 33. p. 617.
19 Annalen, 207, p. 154.
20 Berichte, 13, p. 687.
21 ibidem, 27, p. 2533.
22 Apothecary, 6, p. 120.
23 Berichte, 31, p. 661.
24 Pharm. Ztg., 35, p. 306.
25 Pharm. Centrh., 33, p. 617.
26 Berichte, 23, p. 2243.
27 ibidem, 27, p. 558.
28 Pharm. Centrh., 32, p. 598.
29 Pharm. Ztg., 36, p. 537.
30 Am. Drug. & Pharm. Rec., 27, p. 233.
31 Pharm. Centrh., 39, p. 485.
31a Journ. Chem. Soc., 67, p. 327.
32 Annalen, 131, p. 288.
33 ibidem, 184, p. 86.
34 Pharm. Post, 19, p. 572.
35 ibidem, 20, p. 161.
36 Berichte, 21, p. 1111.
37 Jour. Chem. Soc., 69 (II), p. 126.
38 Ztschr. d. allg. oest. Apt. Ver., 24, p. 520; also Pharm. Ztg., 31, 528.
39 Die neueren Arzneimittel. (6th ed.), p. 165.
40 Pharm. Post, 20, p. 161.
41 Am. Jour. Pharm., 70, p. 335.
42 Nat. Disp. (5th ed.), p. 8.
43 Am. Drug. & Pharm. Rec., 22, p. 177.
44 Jour. Chem. Soc. 69 (II), p. 1216.
45 Jour. Am. Chem. Soc., 18, p. 146.
46 Chem. Centrbl., 61, p. 420.
47 Jour. f. prakt. Chem., 52, p. 59.
48 Jour. Chem. Soc. 69 (II), p. 1114.

Laboratory for Pharm. Chemistry, University of Wisconsin.

* Watt's Dict. of Chem. [2 ed.], vol. 1, p. 274.
Schmidt, Pharm. Chem., [3 ed.], vol. 2, p. 895.

Laboratory Notes.

By *Ferdinand A. Sieker.*

Decolorized Tincture of Iodine.

Some time ago the writer published* a résumé of the literature on this preparation and also the results of an analysis of the tincture prepared according to the formula of the National Formulary. A simple formula for preparing this tincture was also offered at the time because the preparation prepared according to the formula of the National Formulary is not satisfactory.

The following is an abstract from this paper:

"The conclusions to be arrived at from these results (meaning the results of the analysis) are that decolorized tincture of iodine when prepared according to the process of the N. F. contains about one-half of its iodine in the form of sodium iodide and the other half as ammonium iodide. It contains some free ammonia but no ethyl iodide, alkali iodate or iodoform. It contains sodium tetrathionate, sulphur and sometimes sulphides which impart a disagreeable odor to the preparation."

The following formula was at that time offered for this preparation:

Tincture of Iodides.

(Synonym. Decolorized tincture of iodine).

Sodium iodide	48.9 gm.
Ammonium iodide	47.3 gm.
Ammonia water (10%)	10.0 cc.
Water	155.0 cc.
Alcohol, a sufficient quantity to make,	1000 cc.

The writer now wishes to suggest that distilled water be used in place of ordinary water. Ordinary alcohol generally contains matter derived from the barrels in which it is kept and when mixed with ammonia assumes a yellowish color. Therefore, it is advisable to use redistilled alcohol or preferably, for the sake of convenience, alcohol that has been treated with potassium permanganate as follows:

* Notes on New Remedies, Dec. 1897, pages 121, 122 and 123.

To 1000 cc. of alcohol add ½ to 1 gm. or a sufficient quantity of potassium permanganate in coarse powder. When the color of the alcohol is dark purple, strain to remove the excess of potassium permanganate. Allow the alcohol to stand for a few hours and then filter. The filtrate should be perfectly clear and colorless. If the alcohol containing the permanganate did not stand long enough it will pass through the filter colored and refiltration will be necessary. The alcohol thus purified should be substituted for ordinary alcohol in the formula given above.

A tincture thus prepared is colorless and keeps well. It should be kept in glass stoppered bottles.

The percentage of iodine in this preparation can be readily determined by titrating with decinormal solution of silver nitrate. The absence of chlorides and bromides must be first established.

Elixir of Terpin Hydrate.

There is some demand for this preparation and a number of formulæ have appeared in print. Aromatic elixir alone or aromatic elixir with alcohol and glycerin are directed as solvents. The demand is for a preparation containing 1 grain of terpin hydrate in each fluid drachm but the solvents directed in the formulæ that have come to the writer's attention will not permanently hold this amount of terpin hydrate in solution at 15° C.

A commercial sample of elixir was examined which was found to contain about 40% by volume of alcohol and 46% of glycerin. The elixir was not flavored.

The following method will yield an elixir similar to the commercial preparation examined:

Dissolve 17.5 gms. of terpin hydrate in 400 cc. of alcohol (a gentle heat may be applied to hasten solution), and add 400 cc. of glycerin, and lastly add enough distilled water to make 1000 cc. An elixir thus prepared will hold the terpin hydrate in solution indefinitely at the ordinary temperature. When exposed to a low temperature some of the terpin hydrate will crystallize out, but this will redissolve on gently warming on a water bath.

Laboratory of Lehn & Fink, New York.

Local Anesthetics.*

By *G. Cohn.*

Up to within a comparatively recent period the number of chemical compounds which were capable of producing local anesthesia was exceedingly limited, cocaine being the only one which received any extended use in medicine. However with the rapid progress made in the synthesis of antipyretics, hypnotics, antiseptics, etc., the attention of chemists was soon directed to this class with the result that during the last few years a surprisingly large number of local anesthetics has been introduced. Those substances which produce local anesthesia by reducing the sensibility of the nerve terminals, through cold produced by rapid vaporization are omitted from this article.

As yet no definite relationship has been established between chemical constitution and physiological action in this class of bodies. In isolated cases it has been shown that the removal of certain groups from the molecule deprives it of its medicinal action, yet it has not been proven that their presence contributes any local anesthetic action.

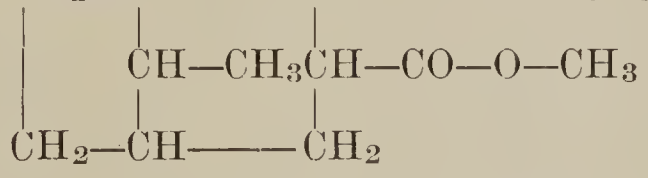
A number of plant principles whose chemical constitution is unknown, possess local anesthetic powers, as for example a 1 to 1000 solution of strophanthin causes local anesthesia of the conjunctiva of man and rabbits, lasting several hours, while a 2.5 percent solution enables the painless removal of foreign bodies from the cornea. In addition to the above glucoside, helleborein, convallamarin, adonidin, carpain hydrochlorid and muawin hydrobromid may be cited; perhaps also the benzoyl derivatives of tropin, morphin, hydrocotarnin, quinin and cinchonin etc. experimented with, by W. Filehne. All of these enumerated bodies have not found application because of unpleasant side effects.

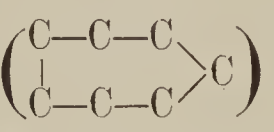
The only local anesthetic of the aliphatic series is the so-called acetone-chloroform, anesin, or tri-chloro-tri-methyl-carbinol $\begin{matrix}CCl_3\\CH_3\end{matrix}\!\!>\!C\!<\!\!\begin{matrix}OH\\CH_3\end{matrix}$ discovered by Willgeroth and Geniesser. This body

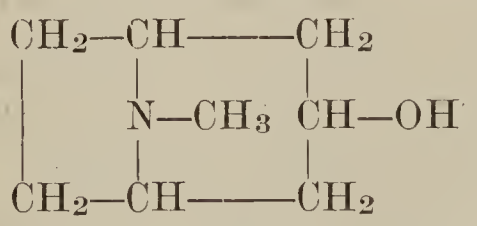
* Translated from the Phar. Centralhalle, Vol. 40, p. 33, by Professor V. Coblentz of the New York College of Pharmacy. The translation is free with omission of such data as might be already familiar to readers and of superfluous details.

forms colorless crystals which melt at 97° C., boil at 166.4° C., and possess a camphor-like odor. It reduces ammoniacal silver nitrate slowly in the cold, is soluble in the usual organic solvents, while in water it is almost insoluble. Zoltán succeeded in preparing 1 to 2 percent solutions of anesin which were equal in activity to a 2 to 5 percent solution of cocaine. In ophthalmology, its application is less simple than that of cocaine, because when employed its solution must be continuously dropped for two minutes into the lower conjunctival sac in order to produce complete insensibility. The accomodation is not interfered with. Anesin is absolutely harmless, hence can be employed in all surgical cases. It is prepared by F. Hoffmann-la Roche of Basel.

To the alicyclic series belong the members of the cocain and eucain groups. Our views concerning the constitution of cocain have undergone considerable change during the past few years. The formula of Willstaetter, being that which is at present generally accepted, is

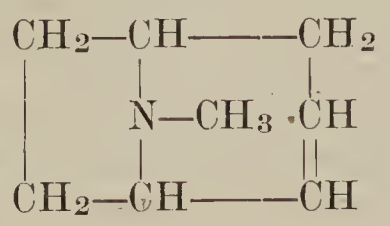


The presence of a seven membered ring  in this formula was established through the conversion of tropic acid, which results along with ecgonin through oxidation, into normal pimelinic acid. Likewise this tropic acid, though optically different, results as one of the decomposition products from tropin



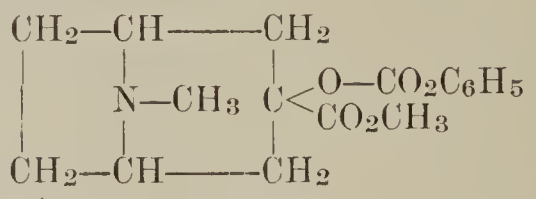
which is a decomposition product of atropin.

This relationship between the ecgonin and atropin groups was established through the conversion of anhydroecgonin into tropidin



The presence of the group $-CH_2CH(OH)-CH_2-$ in tropin has been proven in that it can be oxidized to tropinon, a ketone, the deportment of which toward nitrous acid, aldehydes and other reagents characterizes the group $-CH_2-CO-CH_2-$.

Tropinon is interesting since it has rendered possible the synthesis of an isomeric cocaine, viz. *α*-cocain



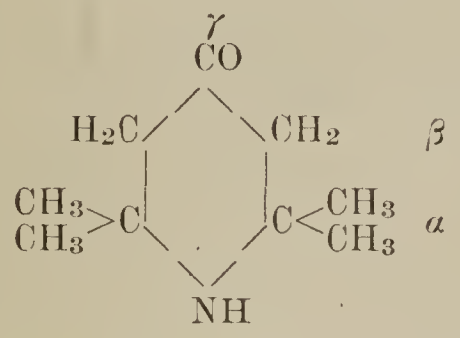
which possess local anesthetic properties.

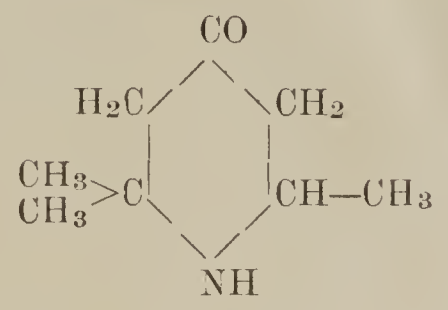
As is well known, cocain is also obtained from the side alkaloids which accompany it in the coca leaf, which upon being saponified yield ecgonin. Cocain being the benzoyl methyl ester of ecgonin, the conversion of this into cocain consists in boiling 2 parts of ecgonin with 1 part of benzoic acid anhydrid and 1 part of water. The resulting benzoyl ecgonin is then methylated in the usual way; treating ecgonin hydrochlorid in methyl alcohol with benzoyl chlorid for several hours, the side alkaloids may be heated directly with methyl alcohol and sulphuric acid which results in their saponification and esterification; after this the resulting methyl ecgonin is benzoylated. The toxic properties of cocain have offered sufficient cause for chemists to seek about for less dangerous substitutes, 1 gm. being a deadly dose; 0.001—0.0015 gm. causes a total destruction of the white blood corpuscles in 1 gm. of blood. The other cocains have not met with much success. Dextro-cocain, the optical antipode of cocain, brings about local anesthesia somewhat more rapidly. Tropacocain (benzoyl-4-tropein) has become more popular because of its more rapid and continuous action, also because of its less toxic character and causing but feeble mydryasis. These advantages are overcome, however, by serious objectionable features.

Closely related to cocaine are the members of the eucain group which are derivatives of *γ*-oxy-piperidin $NH\langle^{CH_2-CH_2}_{CH_2-CH_2}\rangle CH.OH$ or *γ*-oxy-piperidin carboxylic acid $NH\langle^{CH_2-CH_2}_{CH_2-CH_2}\rangle C\langle^{OH}_{COOH}$.

To develop anesthetic action, the carboxyl group must be esterificated, the hydroxyl group united with an anesthetic group as benzoyl-phenacyl, etc., while the imido group remains free or may be alkylated.

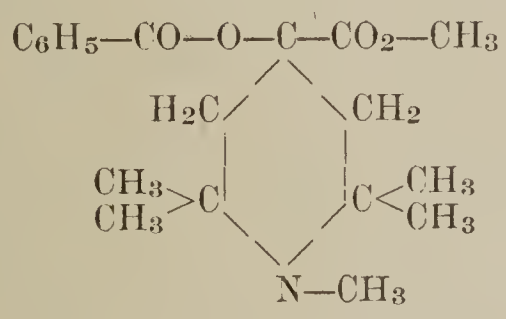
The two methylene groups which are linked to the imid group are partly or entirely saturated with alkylenes. The eucaines which were discovered by Merling and prepared by E. Schering are derived from triacetonamin or its analogue trionyl-diacetonamin.



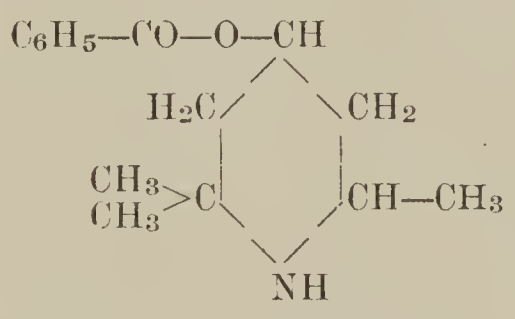


The process of manufacture differs according as to whether a carboxylated or non-carboxylated eucain is desired. In the former case the keto group of the corresponding piperidin is converted into a cyanhydrin by means of hydrocyanic acid, the imido group remaining free or alkylated, yielding the group $>C<^{OH}_{CN}$, which is then saponified $\left(>C<^{OH}_{COOH}\right)$ and the hydrogen of the OH group replaced by a benzoyl radical, while that of the COOH by an alkyl, thus $>C<^{O—COC_6H_5}_{COO\ CH_3}$.

In the case of a carboxyl-free eucain, the keto group (>CO) present is reduced to an alkarnin group (>CH—OH) and this is benzoylated (CH—O.COC_6H_5). Thus we have as examples of these two classes



Eucaine A or *α*-Eucaine.



Eucaine B or *β*-Eucaine.

Eucaine A. Owing to the very slight solubility of this base in water we have a ready means of distinguishing it from cocain or of ascertaining its presence in the latter. Thus if 1 gm. of cocain hydrochlorid is dissolved in 50 cc. of water and the solution then shaken with 2 drops of aqua ammonia (10 p. c.), a clear mixture will result, but if 2 percent of eucain be present a milky turbidity forms which clears up only after a further addition of water. A solution of the eucain hydrochlorid gives a crystalline precipitate upon the addition of potassium iodid which is not the case with cocain hydrochlorid.

Eucain hydrochlorid forms glossy permanent scales which are soluble in 10 parts of water at 15° C., and instead of water of crystallization it is capable of taking up two molecules of methyl alcohol. Solutions of eucain can be readily sterilized, which is not the case with those of cocain; also its toxic properties are only ⅓ that of the latter. A 2 to 5 percent solution, when dropped into the eye, produces complete local anesthesia which lasts from 10 to 20 minutes. A similar effect is produced by local or subcutaneous application to the skin. Eucain produces in cold and warm blooded animals an active excitation of the central nervous system followed later by paralysis. Dilation of the pupil does not occur. All observers call attention to its characteristic production of hyperemia, while with cocain ischemia results.

According to Vollert, eucain causes strong congestion of the conjunctival and ciliary vessels, and, contrary to cocain, it reduces the pulse. With the employment of a 5 percent solution a cataract operation was successfully performed, the only objectionable feature noticeable was the irritation and pain produced when introduced into the eye. In operations upon the throat and nose where the parts were penciled, anesthesia proceeded slower than with cocain.

Eucain B, hydrochlorid is soluble in 3.5 parts of water and gives with chromic acid a yellow, amorphous, curdy precipitate. A 2 to 3 percent solution when brought in contact with a mucus surface or is subcutaneously injected produces complete local anesthesia. The acuteness of taste and reflex excitability are also thereby reduced. Upon application to the eye, local anesthesia begins very rapidly and lasts from 15 to 30 minutes; only a very slight mydriasis occurs. Eucain B is about ⅔ as toxic as eucain A, it reacts sensitively upon the central and peripheral nervous systems, diminishes the pulse frequency, lowers the blood pressure and retards the development of bacteria. It causes a lesser dilation of the blood vessels than eucain A, but frequently the hemorrhage is so profuse that it interferes with the operator's view of the parts. According to Schweigger, eucain B is superior to cocain in all operations upon the eye. It has also been demonstrated to be useful in neurosis of the stomach in connection with hyperesthesia of its mucus lining. Ten percent solutions are necessary in operations upon abscesses, carbuncles, fistula, exarticulation of the fingers, etc.

(To be continued.)

MONTHLY REVIEW.

Chemistry.

Hydrastine Hexaiodide and Assay of Hydrastis Canadensis by Means of Standard Iodine for Hydrastine and Standard Potassium Iodide for Berberine. According to H. M. Gordin and A. B. Prescott, hydrastine forms a hexaiodide when a solution of any of its salts is added to an excess of a solution of iodine in potassium iodide. Berberine forms an insoluble compound with acetone in presence of alkali and an almost completely insoluble hydriodide. Hydrastine is quite soluble in absolute ether in which berberine is completely insoluble. Upon these facts is based a method of assaying *Hydrastis canadensis*. The alkaloids in the powdered root are set free by means of an ethero-ammoniacal mixture consisting of ammonia water, alcohol and ether; the drug after drying is then extracted with absolute ether which takes up only the hydrastine; the latter is shaken out with acidulated water and estimated either iodometrically as a periodide or gravimetrically after shaking out with ether and ammonia and evaporating to dryness. For the estimation of berberine dry air is passed through the root till every trace of ether is removed and the root is exhausted with hot alcohol. The alcohol is evaporated off, the residue taken up with water acidulated with acetic acid and the berberine precipitated by acetone and sodium hydroxide. The acetone compound is then decomposed by means of diluted acid, the berberine precipitated by an excess of twentieth normal potassium iodide, the excess of potassium iodide precipitated by excess of twentieth normal silver nitrate and nitric acid and the excess of silver nitrate titrated back with fortieth normal ammonium sulphocyanate, using ferric alum as indicator. From the amount of potassium iodide consumed is deduced the amount of berberine in the drug. The authors draw attention to the fact that the precipitation of berberine by potassium iodide takes place even in the absence of any acid and the filtrate has no trace of alkalinity.

[Am. Journ. Pharm., 71, p. 257.] *H. M. Gordin.*

Solubility of Potassium Chlorate.—Br. Pawlewski describes the construction of an exceedingly simple apparatus for the determination of solubility at any desired temperature. Results equal in accuracy to those obtained with more elaborate and expensive apparatus are claimed. The solubility of potassium chlorate was determined, at intervals of five degrees, from 0° C. to 100° C. For 15° C. a solubility of 1 in 18.5 and for 100° C. 1 in 1.8 was found, differing somewhat from the solubility stated in the United States Pharmacopœia.

[Ber. d. chem. Gesell., 32, p. 1040.] *W. A. P.*

Standardization of Volumetric Acid Solutions.—Anton Seyda discusses the standardization of semi-normal hydrochloric acid by means of potassium bitartrate, ammonium chloride and sodium carbonate. In his own work the values obtained with the first two substances agreed closely while those yielded by sodium carbonate differed somewhat. The variation was due to the difficulty with which sodium bicarbonate is changed to the normal carbonate. Bicarbonate having been found after heating to 250° for four hours; if heated to fusion sodium hydroxid was formed. Satisfactory results were finally obtained by pulverizing the bicarbonate, pouring it loosely into the crucible and either heating it in a drying oven at 220° for one hour or else heating it with a direct flame for 30—45 minutes.
[Z. oeffent. Chem., 5, p. 141; from Chem. Centralbl. 1899, 1, p. 1164.] *W. A. P.*

The Estimation of Acetic Acid in Commercial Acetates and the Separation of Acetic, Propionic, Butyric and Formic Acids.—K. R. Haberland remarks that while it is important to know the proportion of the homologues of acetic acid occuring in commercial acetic acid, the analytical methods so far known are all very faulty, and describes the experiments upon which he has based a satisfactory separation and estimation.

Desiring to use crude acetate of lime in his experiments he determines the acetic acid therein by the two commonly used methods, checking his results upon barium acetate, the purity of which was demonstrated by analysis. The first method, for which full directions are given, depends upon the destillation of the calcium acetate with hydrochloric acid and determining in an aliquot portion of the destillate the total acidity, in another the hydrogen chloride according to Volhard and the excess of total acidity over hydropen chloride calculated to acetic acid. The second method was that of R. Fresenius (Zeitschft. anal. Chem. 5, p. 315 and 14, p. 172). Both methods yielded satisfactory results, thus, while theory requires for barium acetate 47.05 p. c. the first method gave 46.93 p. c. and the scond 47.01 p. c.

The separation of the various acids was, after many trials, based upon the insolubility of basic-lead propionate in boiling water, the insolubility of zinc formate in alcohol and the greater solubility of silver acetate over silver butyrate and the lower boiling point of amyl acetate (135—138° C.) as compared with amyl butyrate (175—177.50 C.). The procedure, for which full data are given, is briefly as follows: The four acids are liberated by phosphoric acid, distilled with steam and the destillate evaporated to dryness with lead oxide. The residue is treated with cold water, filtered and the filtrate heated to boiling. The basic lead propionate is removed by filtration and from the filtrate the lead removed with sulphuric acid. This solution is evaporated to dryness and treated with absolute alcohol. The insoluble portion consists of zinc formate and zinc sulphate and these are separated by destillation with phosphoric acid.

The alcoholic sulition of zinc aeetate and zinc butyrate is brought to dryness and the acids liberated by distillation with phosphoric acid. These are now, by treatment with silver carbonate, changed to the silver salts and finally separated by their varying solubility.

[Ztschf. f. anal. Chem. 38, p. 217.] *W. A. P.*

Silico-Tungstic Acid as an Alkaloidal Reagent.—Further particulars are now available concerning this reagent, a brief notice of which appeared on page 500 of the Pharm. Journ. G. Bertrand reports that it is free from the objections raised against many reagents at present employed for the purpose. Thus, it does not precipitate the salts of potassium and ammonium as is the case with platinic chloride. It is cheap, is well adapted for the extraction of alkaloids, and gives stable, well-defined salts, which are easily analysed with exactness. For some analytical determination the molecnlar weight of silico-tungstic acid (about 3000) renders it especially suitable. It is the most sensitive of all the known alkaloidal precipitants, and nothing is easier than to obtain the alkaloids from the precipitates. The free acid $12WO_3SiO_2 2H_2O$, or its alkaline salts may be used. Wysouboff recommends for qualitative analysis a solution made with five grammes of the crystallised acid or the sodium salt, in one hundred cubic centimetres of distilled water. The precipitates are insoluble or slightly soluble in cold water, and a little more soluble in boiling water. The ease with which the alkaloids are liberated from the precipitates is one of the principal advantages in using this reagent. They are instantly decomposed in the cold by alkalies. The action of silico-tungstic acid has been tried on a number of glucosides, e. g., amygdalin, arbutin, coniferin, digitalin, salicin, etc., also on starches, tannin, gum arabic, asparagin. Except with albuminoid bodies, for which the acid is a delicate reagent, no precipitate was obtained in acid or neutral solution.

[Pharm. Journ. 62, p. 503; from Bull. Soc. Chim. 9, p. 434.]
I. W. Brandel.

Scoparin.—A. G. Perkin points out that scoparin, the coloring matter of broom (*Spartium scoparium*, L), was discovered by Stenhouse (Annalen, 1851, 78, p. 17), who assigned to it the provisional formula $C_{21}H_{22}O_{10}$ (mean of analyses, C=57.67; H=5.34), and that Hlasiwetz (Annalen, 1866, 138, p. 190) included scoparin in the quercetin group, for, on fnsion with alkali, it gave phloroglucinol and protocatechuic acid. The similarity of the dyeing properties of scoparin and vitexin pointed to their close relationship (Trans. Chem. Soc., 1898, 73, p. 1019). The results of Stenhouse and Hlasiwetz (loc. cit.) have been confirmed, as analysis gave C=57.60, H=5.09, and fusion with alkali at 220°, phloroglucinol and protocatechuic acid. Digested with hydriodic acid, one molecnle of methyl iodide is evolved (found, CH_3=3.88), and a new coloring matter, scoparein, results, dis-

tinguished from scoparin by its strong tinctorial properties. With boiling potassium hydrate solution, scoparin gives phloroglucinol, vanillic acid, and a third substance, $C_9H_{10}O_3$ (found, C=64.82; H=6.17), colorless needless m. p. 114°. As this latter contains one methoxy-group (found, CH_3=9.65), reacts with semicarbazide, and on fusion with alkali gives protocatechuic acid, it is a dihydroxyacetophenonemonomethyl ether (probably $OH:OCH_3:COCH_3=1:2:4$). Solutions of vitexin and scoparin in sulphuric, when heated, both develop a dull green coloration. The former by decomposition with alkali, gives p-hydroxyacetophenone and phloroglucinol, and it is thus very probable that scoparin is a methoxy-vitexin.

[Ph. Journ., 62, p. 451; from Proc. Chem. Soc., 15, p. 123.] *E. K.*

Pure Solanine.—Attributing the different formulæ for solanine obtained by previous workers to the decomposition of the alkaloid through defective methods of extraction, P. Cazeneuve and P. Breteau have reviewed the subject. They obtain the pure alkaloid by bruising shoots of potato, not exceeding 10 Cm. in length, with half their weight of slaked lime. The mass thus obtained is dried in the air, then extracted with cold alcohol (90 percent). The alcoholic extract is distilled *in vacuo*, the crystals which separate from the syrupy residue are washed with petroleum ether and ether, and then recrystallised from alcohol. In this way about 0.1 percent of light, absolutely colorless, silky needles are obtained, barely alkaline to litmus, melting at 250° C., corresponding to the formula $C_{28}H_{47}NO_{10}2H_2O$. When hydrolysed with hydrochloric acid, it splits up into solanidine, which is a crystalline body, soluble in ether, melting at 190° C., and a reducing sugar. This pure solanine differs from those previously described in giving only the faintest yellow color with sulphuric acid; with nitric acid it gives a colorless solution, which slowly develops a faint rose tint, and it is dissolved without color by hydrochloric acid. The solanines previously described give intense color reactions with all these reagents.

[The Journ., 62, p. 483; from C. r., 128, p. 887.] *E. K.*

Cochlearia Oil.—J. Gadamer has observed that the dried herb of *cochlearia* without flowers, after having been soaked in water together with some powdered white mustard seed, furnishes a considerably higher yield—0.236 percent—of essential oil. The oil contains, as has been ascertained by the late Professor A. W. von Hofmann, as principal constituent secondary butyl-mustard oil, $SCN.CH<^{C_2H_5}_{CH_3}$, but no isobutyl-mustard oil. It has the specific gravity $d_{20°}$=0.94179 and the refractive index $n_{D22°}$=1.4932; at a temperature of 150° to 162° it distills, leaving a small residue (perhaps 5 percent). As the formula of the secondary butyl-mustard oil contains an asymmetric carbon atom, the inference must be drawn that the oil is optically active. The fact is that the unrectified oil showed a dextrorotation of

$(\alpha)_D + 55°27'$. The secondary butylthiourea, originating by the action of ammonia upon the oil, is also optically active. All efforts to obtain therefrom the optically active secondary butylamine have failed, yielding in every case the inactive amine only. When cochlearia oil is heated to 200° for some time with water in a closed tube, besides inactive secondary butylamine, dibutylthiourea, $C_4H_9.NH.CS.NH.C_4H_9$, melting at 108° to 110°, is formed, evidently by the action of the amine upon mustard oil.

[Report S. & Co., Apr. '99, p. 15; from Arch. d. Pharm., 237, p. 92.] *E. K.*

Eucalyptus Oil.—The various eucalyptus oils have always been grouped into two classes, namely those with a high percentage of eucalyptol (cineol), obtained mainly from *Eucalyptus globulus*, and those containing phellandrene, mostly distillates from *Eucalyptus amygdalina*. In the belief that for medical purposes eucalyptol is the efficient factor, the former group of oils has been employed exclusively for medical preparations and application. This is in accord with the new English pharmacopœia, which recognizes only the distillates from *Eucalyptus globulus*.

According to a statement of Baker and Smith[1] several species of *Eucalyptus* are known in New South Wales by the name of "Stringybark Trees"; these are *Eucalyptus obliqua* L.'Hér., *E. Baileyana* F. v. M., *E. macrorrhyncha* F. v. M., *E. capitellata* Sm., *E. eugenioïdes* Sieb., and *E. fastigiata* Deane and Maiden, to which may be added *Eucalyptus piperita* Link and *E. triantha* Link. The best known of these "Stringybarks" namely *Eucalyptus macrorrhyncha* (red Stringybark), *E. capitellata* (white Stringybark) and *E. eugenioïdes* (brown Stringybark) have been studied in their botanical relations by Deane and Maiden[2]. About the oils obtained from these species Baker and Smith have published the following notes:

Oil of Eucalyptus macrorrhyncha. The average yield obtained from nine distillations amounted to 0.287 percent; the oil has a reddish-brown color and an agreeable odor; its specific gravity is $d_{18°} = 0.927$. On account of its dark color the optical rotation could not be determined, it seems however to be a varying one, inasmuch as both a dextrogyrate an a laevogyrate rotation were observed with fractions with a low boiling point. The raw oil did not render a strong reaction of cineol with phosphoric acid, but from the fraction distilled at 177.6° to 180° a percentage of 53.2 of cineol could be obtained. The oil also contains traces of phellandrene and of ester-like constituents. The fractions with high boiling points gradually solidify and contain much "Eudesmol"[3].

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[1] On the "Stringybark Trees" of New South Wales, especially in regard to their essential oils. Proc. of the Royal Soc. of N. S. Wales 32 (1898), p. 104.

[2] Proc. Linn. Soc. of N. S. Wales 21 (1896), p. 798.

[3] This substance was first obtained by the authors from the oil of *Eucalyptus piperita* Sm. ("Sydney Peppermint"). It is said to melt at 74° to 75° and to boil at 270° to 272°. Proc. Royal Soc. N. S. Wales 31 (1897), p. 198.

Oil of Eucalyptus capitellata. The raw oil (yield 0.103 percent) has the specific gravity $d_{18°}=0.9153$; on account of its dark color the optical rotation could not be ascertained. The fraction distilling between 174.5° and 198.2° yielded 38,4 per cent. of cineol. The oil contains traces of phellandrene and only little "Eudesmol".

Oil of Eucalyptus eugenioïdes. Yield 0.689 to 0.795 percent. The oil is almost colorless and has an agreeable odor, the specific gravity $d_{22°}=$ 0.907 to 0.908 and the rotatory power $(\alpha)_D=+3.745°$ to $+5.246°$. With two samples the percentage of eucalyptol proved to amount to 28.1 and 31.4; phellandrene could not be found in the oil.

The authors feel justified to call attention to and to predict a useful application of the oil of *Eucalyptus macrorrhyncha*.

In connection with this subject-matter a brief report on two other eucalyptus species of N. S. Wales recently described by R. T. Baker[4] may be added; these are *E. laevopinea* ("Silver-Top Stringybark") and *E. dextropinea* ("Messmate" or "Stringybark"). The oils obtained from these species have been examined by G. Smith[5]. They are of interest in that they mainly consist of pinene, a hydrocarbon as yet found only in small quantities in the oils of the group of *E. globulus*. On the other hand they contain very little cineol, the presence of which could be determined by the iodol and hydrogen bromide tests. It remains to be seen by further observations whether the amount of cineol in both oils at the various seasons is a constant one.

Mr. Smith states that *E. dextropinea* yields 0.825 to 0·850 percent of oil, having the specific gravity $d_{17°}=0.8743$ to 0.8763, and *E. laevopinea* 0.66 percent, with the specific gravity $d_{18°}=0.8732$.

The pinenes obtained by fractional distillation from both oils, d-pinene from *E. dextropinea* (boiling point 156°, specific gravity $d\frac{18°}{16°}=0.8629$, optical rotation $(\alpha)_{D\,18°}=+41.2°$) and l-pinene from *E. laevopinea* (boiling point 157°, specific gravity $d\frac{19°}{16°}=0.8626$, optical rotation $(\alpha)_{D\,19°}=-48.63°$) are in accord with the hydrocarbons of the oils of pines and yield the derivatives characteristic for pinene. Although they are identical with pinene and differ from the pinene of turpentine oil only by a slightly higher rotary power, Mr. Smith has preferred, on this account, to call the dextrogyrate pinene "Eucalyptene" and the laevogyrate "Eudesmene".

This multiplication of names for identical bodies cannot but meet with disapproval, for it restores the former confusion about these hydrocarbons. Provided that a hydrocarbon can be distinctly characterized by derivatives, a slight discrepancy in its optical rotation does by no means justify a

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[4] Proc. Linn. Soc. N. S. Wales 26 (1898), p. 414.
[5] Proc. Royal Soc. N. S. Wales 32 (1898), p. 195.

distinction by a special name. There is particularly no reason for specifying d-pinene of *E. dextropinea*, since a higher rotary power has been observed for the d-pinene of the oil of *Pinus Cembra*, $[(\alpha)_D = +45.04°]$. For the pinene obtained from French turpentine oil, figures of optical rotation $[(\alpha)_D = -43.4°]$ have been found which closely approach those of the so-called "Eudesmene".

On page 27 of our Report of October 1898, we referred to a paper of Mr. Parry on a new eucalyptus oil, said to be obtained from *Eucalyptus toxophleba*. We owe to Mr. E. M. Holmes, Curator of the Museum of the Pharmaceutical Society of Great Britain the information that Mr. Parry's nomenclature is not quite correct; it should be read *loxophleba* in place of *toxophleba*.

There are but few plant genera whose essential oils present such a striking variety in their composition as that of eucalyptus. The new oils just mentioned, furnish an additional evidence of this fact. Cineol, citral, citronellal, cuminaldehyde and the hydrocarbons cymene, pinene, phellandrene and some other compounds have been recognized as constituents of the various eucalyptus oils. Further researches on the oils of this interesting genus may bring about the discovery of new constituents and we possibly may succeed in ascertaining whether there exists an organic relationship in the composition of the various oils corresponding to their botanical relations, so that a more adequate classification of the species may become possible. [Report S. & Co., Apr. '99, p. 23.] *E. K.*

Lepidium Oil.—This oil consists, according to the late Prof. A. W. von Hofmann's researches, of the nitrile of phenylacetic acid. J. Gadamer has recently ascertained that this is not quite correct and that the oil distilled from the fresh herb, carefully cut to pieces consists of benzyl-mustard oil. This oil is not ready-formed in lepidium, but results from the action of a ferment upon a glucoside. Since both are present in different cells of the plant, the formation of benzyl-mustard oil cannot take place before the cellular tissue is torn, so that the ferment and the glucoside come into contact and action upon one another. When the disruption of the cellular tissue is not brought about before the distillation, the ferment becomes inactive by the heat before this can break up the cells. The remaining glucoside then furnishes benzyl cyanide by decomposition. Prof. Hofmann, who obtained benzyl cyanide only, and no benzyl-mustard oil, has probably experimented with the plant without cutting it before distillation.

[Report S. & Co., April '99, p. 29; from Arch. d. Parm. 237, p. 111.] *E. K.*

Sandal-wood Oil, West Indian.—Mr. Holmes, Curator of the Museum of the Pharmac. Soc. of Great Britain, has published an interesting paper*

* Pharmac. Journ. (London) 1899. No. 1491.

on the so-called "West Indian sandal-wood". The geographical distribution of the genus *Santalum* made it more than doubtful whether this wood may be derived from a *Santalum*. Mr. Holmes obtained by the aid of the British Consulate at Puerta Cabello leaves and branches of the tree, while we succeeded, after several years' efforts, in getting a branch with flowers as also a number of fruits of the tree. Former examinations of Kirkby and Petersen had established the fact that the plant is not a *Santalacea*, but very likely a *Rutacea*. Subsequently, when we had obtained the fruits, and a re-examination in the Botanical Garden at Cambridge had brought out the fact that the plant did not belong to any genus of *Rutaceae* described in English botanical literature, Mr. Holmes supposed it to be a new genus. Dr. Urban in Berlin however showed that the plant belongs to the genus *Amyris* and has identified it as *A. balsamifera*. This genus has thus far been classified by English botanists among the *Burseraceae*, in Germany, however, and correctly as admitted by Mr. Holmes, among the *Rutaceae*. The only differences between the Venezuelan plant and the specimens of *A. balsamifera* in the Kew Garden Museums consist in a more elliptical fruit and the relative length of the stamens, of which 4 are longer than the other 4. As there is no valid reason why there should not be a slight difference in the shape of the fruits, and as the difference in the relative length of the stamens may have been overlooked at former botanical examinations, Mr. Holmes also feels disposed for the present to consider *A. balsamifera* as the tree furnishing West Indian sandal-wood.

[Report S. & Co., Apr. '99, p. 41.] *E. K.*

Sandal-wood Oil, East Indian.—Hitherto West Australian sandal-wood oil was believed to be obtained from the wood of *Santalum cygnorum*. According to the statement of Mr. Parry[1] the wood of at least three other species is used for distilling the oil, *Santalum lanceolatum*, *S. acuminatum*, and *S. persicarum*. The woods are indiscriminately collected and used for distilling. [Report S. & Co., Apr. '99, p. 40.] *E. K.*

Iodine in Sea Water.—In a contribution to the debated question as to the amount of iodine present in sea water, A. Gautier states that in the form of inorganic salts practically no trace exists in the water of the open sea. In the form of organic compounds, however, a considerable amount of iodine is found, amounting in an insoluble condition to 0.52 parts per million, and as dissolved organic iodine 1.8 parts per million, giving a total of organic iodine of 2.32 parts per million.

[Ph. Journ., 62, p. 524; from C. r., 128, p. 1079.] *E. K.*

Cocaine Hydrochloride.—The following summary and critique by Paul and Cownley on the test for purity of cocaine ought to be of special interest at the present time. "The occurrence of several alkaloids besides

[1] The Chemist and Druggist. 53 (1898, II), p. 708.

cocaine in the "crude cocaine" which is used for the preparation of cocaine hydrochloride is now well established. Cocamine or isatropyl cocaine, discovered by Hesse and by Liebermann, benzoyl pseudo-tropine by Giesel, and cinnamyl cocaine by Paul and Cownley (P. J. [3], 20, 166) are all bases naturally present in the total alkaloids obtained from the coca leaf, whilst other bases, such as dextro-cocaine, ethyl-benzoyl-ecgonine, as well as cinnamyl cocaine, have been synthesised respectively by Einhorn and Marquardt, W. Merck and Liebermann. It is quite possible, therefore, that, as in the total alkaloids obtained from many natural products, "crude cocaine," being of complex character, contains alkaloids in addition to those mentioned still to be isolated. The existence of isomeric ethyl-benzoyl-ecgonine (Günther, P. J. 62, 251) and cocainidine (Schaefer, P. J. 62, 359) may or may not be subtantiated. The chief point of interest is how far the presence of these or other coca bases is likely to affect Maclagan's well-known test for the purity of cocaine hydrochloride. It has been already stated by us (P. J., 60, 586) that a sample of cocaine hydrochloride that does not answer Maclagan's test is not suitable for medicinal purposes, and to this opinion we still adhere notwithstanding the assertion of Günther, who erroneously maintains that the crystalline precipitate separating in Maclagan's test is not cocaine but may be isomeric ethyl-benzoyl-ecgonine.

Normal ethyl-benzoyl-ecgonine, $C_{16}H_{18}(C_2H_5)NO_4$, is already known, although it has not been found to exist naturally in crude cocaine. Its synthesis was first effected by W. Merck in 1885 (P. J. [3], 16, 543), who obtained it by the interaction of ethyl iodide and benzoyl-ecgonine at the same time that he was successful in synthesising methyl-benzoyl-ecgonine, $C_{16}H_{18}(CH_3)NO_4$, or cocaine by the interaction of methyl iodide and benzoyl-ecgonine. F. G. Novy, who further studied ethyl-benzoyl-ecgonine (P. J. [3], 18, 233)—or, as Ladenburg designated it, cocethyline—described it as a base crystallising from alcohol in large monoclinic prisms like cocaine. It melts at 107-108° C., and pields readily crystallisable salts, which are precipitated by alkalies and alkaline carbonates, being soluble in excess of the precipitant. The alkaloid is said to possess the same physiological properties as cocaine. The only distingnishing feature between Merck's synthetic base and Günther's isomeride is the melting point, the latter being said to melt at 111° C. The difference of 3° between the melting points of the two bases cannot be held as a very great distinction, as a very small amount of impurity would cause the variation. Moreover, the determination of the melting point of an alkaloid is quite a matter of personal observation and opinion when the point of fusion is to be noted, apart from the inherent difficulties of the determination of the melting point of the alkaloids. Assuming Günther's observation of the existence of this isomeride to be correct, its most important property is the claim of its being less soluble in water than cocaine. In other words, it is suggested that the crystalline

precipitate obtained in Maclagan's test cannot be cocaine, but may be the isomeride of ethyl-benzoyl-ecgonine. The only reasons adduced for this assumption are that cocaine is stated to have a solubility in water of 1:704, the isomeride 1:2500-3000, whilst Maclagan's test necessitates a solubility of 1:980.

It may be as well to state at once that we have never met with this isomeride of ethyl-benzoyl-ecgonine in a sample of commercial cocaine hydrochloride that answers Maclagan's test. Moreover, the statement that the fact of synthetically prepared cocaine answering to Maclagan's test is merely due to this isomeride cannot in our experience be substantiated. In order to test this statement cocaine hydrochloride which had been prepared from the synthetic base was submitted to Maclagan's test, and the base, which readily separated on stirring in a crystalline form, was collected and dried. Its melting point, when taken in Roth's apparatus, had the melting point of pure cocaine similarly taken, namely, 97° C. It was evidently not isomeric ethyl-benzoyl-ecgonine, but pure cocaine.

It may be advisable to direct attention to the various statements made as to the solubility of cocaine in water, on which Maclagan's test solely depends. Maclagan's original test of 1 grain of cocaine hydrochloride in 2 fluid ounces of water, or 0.8825 grain of cocaine alkaloid in 875 grains of water, gives a proportion of base to water of 1:980. It has previously been stated (B. H. Paul, [3], 16, 325) that the solubility of cocaine is less than 1:1300, so far as it is possible to determine the solubility of a base which gradually undergoes decomposition into benzoyl-ecgonine when in contact with water, especially in presence of free alkali. Its solubility in water cannot be ascertained by the usual methods adopted for such determinations. It is quite impossible, for instance, to obtain correct results by agitating the base for a definite time with water and determining either the soluble or the insoluble portion; or even by precipitating the base in a definite quantity of water and noting the limit of precipitation without regard to the essential factor in Maclagan's test, namely, rapid stirring of the solution, for the precipitation of a dilute solution of cocaine by ammonia is much analogous to the precipitation of a dilute solution of a magnesium salt with di-sodic phosphate. That this view is correct is confirmed by the results obtained by E. Merck (Pharm. Zeit., 44, 367), who determined the solubility of cocaine in water at 24° C. by frequent agitation of finely divided cocaine with water for from 3 to 5 hours. The co-efficient of solubility based on the difierence between the amount of alkaloid taken and that left undissolved was 1:1340, whereas the co-efficient arrived at from the alkaloid extracted by ether and chloroform from the aqueous liquid was 1:2590, the higher figure being due to the loss of alkaloid by decomposition into benzoyl-ecgonine.

In order, therefore, to ascertain the true value as to the solubility of cocaine in water, due regard must be had to the conditions of the test for which the co-efficient of solubility is to be applied. The correct solubility of cocaine in the liquid as prescribed in Maclagan's method of testing is best ascertained by following the method as near as possible in a practical operation. That is to say, the cocaine salt should be dissolved in water, one or two drops of 960 ammonia solution added, and the liquid rapidly stirred for some minutes until no further separation of crystals occurs. Operating in this manner the following results were obtained.

Pure cocaine hydrochloride prepared from the synthetic base, which gave a melting point of 97° in a Roth's apparatus, was employed, and the solubility determined at 15.5° C.

Cocaine HCl. taken. Gramme.		Cocaine. Gramme.	
0.0112	=	0.01	in 13 cubic centimetres of water including AmHo (1 drop of 960), and well stired, gave a crystalline precipitate in five minutes.

Base.		Water.
1	:	1300

0.0112	=	0.01	in 14 C.c. total liquid just showed a precipitate, after well stirring, in 15 minutes.

Base.		Water.
1	:	1400

0.0112	=	0.01	in 15 C.c. total liquid gave no precipitate after long stirring with a glass rod.

Base.		Water.
1	:	1500.

Similar results were obtained with 1 grain or 0·0648 gramme cocaine hydrochloride, equal to 0 0578 gramme cocaine, as in Maclagan's test in a dilution of 80·9 C.c. (1:1400) and 86.7 C.c. (1:1500) respectively.

The solubility of pure cocaine in water when operating as directed in Maclagan's test is therefore about 1:1500 at 15.5° C. It is well to emphasise this point, as it is the essence of Maclagan's test, and its accurate determination negatives the disparagement that is attempted to be made as to the value to be attached to the only test at present, in our opinion, of any value for the determination of the purity of cocaine hydrochloride."

[Ph. Journ., 62, p. 524.] *E. K.*

Practical Pharmacy.

The Detection of Cottonseed Oil.—D. Holde and R. Pelgry confirm the reliability of Halphen's test for cottonseed oil (Pharm. Review, 17, p. 159). They were able to demonstrate the presence of cottonseed oil even in fish oils.

[Chem. Rev. Fett u. Harz-Ind., 6, p. 67; from Chem. Centralbl., 1899, 1, p. 1085.] *W. A. P.*

Syrupus Rhei.—A brief summary of the development of the formula for the U. S. P. preparation is given by Fr. W. Haussman. The syrup when prepared according to the official method is objectionable in that it contains a large amount of inert substances and is not dense enough. The following formula has been tried and is said to obviate these objections. 4 cc. of spirit of cinnamon are mixed with 100 cc. of fluid extract of rhubarb. To this are added 375 cc. of water in which 10 gms. of potassium carbonate have been dissolved. The mixture is allowed to stand, with occasional agitation during two hours, then filter, and when the liquid has drained add more water until 475 cc. of filtrate are obtained. 750 gms. of sugar are dissolved in the filtrate by agitation, without heat, and strained, and sufficient water is added through the strainer to make the product measure 1000 cc. [Am. Jour. Pharm. 71, p. 267.] *W. O. R.*

The Estimation of Filcic Acid in Extract of Male Fern.—Caesar and Loretz recommend the following modification of Fromme's method. 5 gm. of extract, 30 gm. ether and 100 gm. 2 p. c. solution barium hydrate are weighed into a 200 cc. flask, shaken continuously for 5 minutes, the mixture poured into a separator and allowed to stand for 10 to 15 minutes. Of the lower, aqueous solution 86 gm. (representing 4 gm. extract) are drawn off, rendered acid with 25 to 30 drops of hydrochloric acid and extracted successively with 25, 15 and 10 cc. of ether. Should the last portion of ether still be colored when drawn off a further portion of 10 cc. of ether is used. The ethereal solution is passed through a filter, removing adhering water, received in a tared flask and the ether allowed to evaporate. 30 cc. of methyl alcohol are measured out and one cc. of this with 1 cc. of amyl alcohol added to the residue in the flask, solution affected by gently warming over a small flame, then methyl alcohol is added drop by drop until the precipitate becomes permanent when the remainder is added. In this manner the filicic acid is thrown out in a floculent condition. The mixture is set aside in a cool place (cellar) for at least 10 to 12 hours and then passed through a tared filter. The flask and filter are next washed with two portions of methyl alcohol, 5 cc. each, the liquid adhering to precipitate and filter absorbed with paper or absorbent tiles and finally flask as well as filter dried, first at 40° C. then at 80° C. The weight of empty filter and flask subtracted from total weight found gives the amount of filicic acid in 4 gm. of extract.

[Ztschft. d. allgem. oester. Apot. Ver. 51, p. 92 from Ztschft. f. anal. Chem., 38, p. 266.] *W. A. P.*

Physiology.

Proteolytic Enzyme of Nepenthes.—A further series of experiments by S. H. Vines confirms his previous statement of the remarkable stability of

the enzyme of the pitcher plant. The enzyme is in all probability derived from a zymogen present in the gland-cells. It is essentially tryptic in its character—probably a feature of all vegetable proteolytic enzymes—and closely resembles that of the germinating seed, but it is more rapid and energetic in its action, and more stable in its nature.

[Ph. Journ. 62, p. 483; from Ann. of Bot., 12, p. 545.] *E. K.*

Toxalbumin from Eel's Flesh. — The presence of a toxalbumin in the blood of the eel was demonstrated in 1888 by Mosso. E. Bénech now states that the flesh of the fish, carefully freed from blood, also contains a toxalbumin, soluble in water, precipitated by saturated ammonium sulphate solution, slightly precipitated by acids, but not thrown out of solution by magnesium sulphate. Four centigrammes of the dry toxalbumin, dissolved in 8 C. c. of physiological salt solution, killed a rabbit in six hours when injected into the marginal vein of the ear. This body is very sensitive to the action of heat when in solution; after exposure to a temperature of 40° C. for fifteen hours it loses its toxicity completely.

[Ph. Journ., 62, p. 483; from C. r., 128, p. 833.] *E. K.*

Inulin. — H. Fischer finds inulin to be a more widely distributed substance in the vegetable kingdom than has generally been supposed. From its osmotic properties he regards the molecule as 300 times as large as that of saccharose, giving the formula 333 $C_6H_{10}O_5 = C_{1998}H_{3330}O_{1665}$. Inulin gives no reaction with iodine, and the mode of swelling by absorption of water is quite different from that of starch or gelatin. The sphærites increase in volume on obsorption of water, but do not pass gradually into the soluble condition; they dissolve completely like crystals, or break up into granules. Sphærites of inulin also differ from those other substances in their deep radial fissures. Inulin is especially characteristic of the Compositæ, occuring in most of the tribes, and in a large number of the genera. Fischer had also found it in the allied orders Campanulaceæ, Lobeliaceæ, Goodeniaceæ, and Stylidiaceæ; occasionally in other orders, but very rarely in Monocotyledons. Inulin must undoubtedly be ranked among the reserve food-materials.

[Ph. Journ., 62, p. 451; from Cohn's Beitr. z. Biol. d. Pflanzen, 8, p. 53.] *R. H. T.*

New Remedies.

Tannocasum.—A compound of casein and tannin which is split up in the intestines only. It is prepared according to Dr. Romijn (Pharm. Weekbl. '99, p. 44) as follows: To a solution of one kilogramme of casein in 10 liters of water, obtained by aid of sodium carbonate, a solution of 700 gms. of tannin in 3 liters of water with 100 cc. of formalin (40 p. c.) is added with constant

stirring. To this very dilute hydrochloric acid is added until in slight excess. The precipitate which forms is removed by straining and hardened by heating. When dry, tannocasum forms a light gray readily pulverizable mass. When subjected to the action of an artificial peptic fluid for 3 hours at 40—42° C., 75 p. c. of the tannocasum remains insoluble.

[Phar. Centrh., 40, p. 165.] *V. C.*

Kreosoform.—According to the French patent, this disinfectant is prepared by mixing 1000 gms. of creosote, 800 gms. of 40 p. c. formaldehyde solution and 1500 gms. of hydrochloric acid. The resulting condensation product after washing with water forms a greenish, inodorous, tasteless and insoluble mass. Creosote can be replaced by guaiacol, but in this case it is necessary to warm the mixture in order to promote reaction. The resulting compound is yellowish in color. Both compounds have been known for some time under the names of Kreoform and Geoform respectively.

[Phar. Centrh., 40, p. 151.] *V. C.*

Argonin L.—The Hoechster Farbwerke introduce under this title a soluble "Argonin" which is very soluble in cold water and can be kept unchanged almost indefinitely. This preparation contains 10 percent of silver as compared to 4.2 percent in the ordinary argonin. One percent solutions of argonin L. do not produce any pain or irritation upon application.

[Phar. Centrh., 40, p. 220.] *V. C.*

Asterol.—Messrs. Hoffmann-La Roche and Co. of Basel have prepared a soluble para-phenol-sulfonate of mercury (Hydrargyrol) introducing it under the title of Asterol. This contains mercury in a larvated condition and does not precipitate albumin solutions. Asterol forms a brown crystalline powder of very faint odor, the solutions of which are not precipitated by either hydrogen sulphid, potassium ferricyanid, potassium iodid or ammonia water. Stannous chlorid precipitates at first calomel which changes quickly to metallic mercury. The proportion of mercuric oxid in asterol is 17 percent, about four times less than in mercuric chlorid. Instruments may be kept in 0.4 to 2.0 percent solutions for days without action. These solutions do not irritate when applied to wounds, they penetrate deeper than mercuric chlorid and do not lose their antibactericidal properties in the presence of albuminoid matter. [Phar. Centrh., 40, p. 185.] *V. C.*

Later notices state asterol to be a para-phenol-sulfonate of mercury-ammonium tartrate, of the formula $C_{12}H_{10}O_8S_2Hg.4C_4H_4O_6(NH_4)_2+8H_2O$.

[Phar. Centrh., 40, p. 247.] *V. C.*

Urosin.—A tablet prepared by Zimmer and Co. of Frankfurt a/M. which contains 0.5 gm. quinic acid, 0.15 gm. lithium citrate and 0.3 gm. of sugar. Recommended as a remedy for gout.

[Phar. Centrh., 40, p. 247.] *V. C.*

Condensation-product from Formaldehyd and Phenolsulfonic Acid. — An antiseptic condensation product (patented) results upon heating 1 kg. of sodium phenolsulfonate with 3 kg. of 40 p. c. formaldehyde solution and ½ kg. of pure hydrochloric acid together for one hour.

[Phar. Centrh., 40, p. 185.] *V. C.*

Vasothion.—A sulfurated vasogen which contains 10 percent of sulfur, prepared according to a patented process. It is used in treatment of skin diseases. [Phar. Centrh., 40, p. 247.] *V. C.*

Gaultherolin.—Capsules which contain 2.5 gms. of methyl-salicylate.

[Phar. Centrh., 40, p. 247.] *V. C.*

Annidalin.—This former synonym for aristol is now applied to a tri-iodo phenol $C_6H_3I_2.OI$. [Phar. Centrh., 40, p. 295.] *V. C.*

Aspirin.—An ester-like compound of salicylic and acetic acids $C_6H_4{<}^{OCOCH_3}_{COOH}$ prepared by the Elberfelder Farbenfabriken. It forms white needles which melt at 135° C., is soluble in water (37° C.) to the extent of 1 percent, also in the ordinarily used organic solvents. No blue color is produced with ferric chlorid. Aspirin is recommended by Dr. C. Witthauer of Halle in daily doses of 4 to 5 gms. in the treatment of muscular and articular rheumatism, also pleurisy. [Phar. Centrh., 40, p. 295.] *V. C.*

Creosapol.—A disinfectant and antiseptic resembling creolin, prepared by the Chem. Fabrik List of Hannover.

[Phar. Centrh., 40, p. 296.] *V. C.*

Dormiol.—A trade title for amylene chloral prepared by the Chemische Fabrik Rhenania of Aachen. Dormiol is used as a hypnotic in doses of 0.5 to 3 gms., its toxic properties are equal to those of chloral. The following method of administration is recommended: Dormiol, mucilage, gum, syrup each 10 gms., water 120 gms. Make an emulsion, giving one to two tablespoonfuls as dose, shaking well each time before using.

[Phar. Centrh., 40, p. 296.] *V. C.*

Monosulfonic Acid Derivatives of Acetanilid. — By the action of acid or neutral alkali sulfites or alkaline earths on the nucleo-halogen substitution products of acetanilid or its homologes (Exalgin) and substitution products (Phenacetin), according to Hoffmann, La Roche, the halogen is replaced by the sulfogroup and a corresponding sulfo-acid salt results.

The sodium acetanilid-sulfonate forms a white crystalline powder, inodorous, of faint acid reaction, readily soluble in water, insoluble in alcohol and ether. This compound is a non-toxic antipyretic. The same advantages of solubility are possessed by the corresponding salt of phenacetin, namely sodium phenacetin sulfonate.

[Chem. Ztg. p. 273.] *V. C.*

Literary.

Books and Pamphlets Received.

R. Gaertner's Verlagsbuchhandlung — Berlin. Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Literatur. Herausgegeben von Dr. Emil Jacobsen. 37. Jahrgang, 1898. Zweites Halbjahr, zweite Hälfte; pp. 497—657, mit in den Text gedru·kten Illustrationen. 1899.

Missouri Botanical Garden—St. Louis. Tenth annual report. Published by the Board of Trustees. 1899.

Verlag von B. G. Teubner—Leipzig. Luft, Wasser, Licht und Wärme. Acht Vorträge aus dem Gebiete der Experimental-Chemie von Prof. D. R. Blochmann. Ein Bd., pp. v, 137. 1899. M. 1.15.

Verlag von Veit & Comp.—Leipzig. Lehrbuch der organischen Chemie für Studierende an Universitäten und technischen Hochschulen von Dr. A. F. Holleman, o. Professor d. Chemie an der Universität Groningen. Autorisirte deutsche Ausgabe von Dr. Hans Hof. Ein Bd., pp. VIII, 452, mit zahlreichen Abbildungen. 1899. M. 10.00.

Agr. Expt. Station—Madison Wis. Bulletin No. 74: A study of dairy salt. Pamphlet, pp. 45. 1899.

Authors—Sydney, N. S. Wales. 1. On the presence of a true manna on a "blue grass," *Andropogon annulatus*, Forck. Pamphlet, pp. 18, with two plates. 2. On the essential oil and the presence of a solid camphor or stearoptene in the "Sydney peppermint," *Eucalyptus piperita*, Sm. Leaflet, pp. 6. 3. On "grey gum," *Eucalyptus punctata*, DC., particularly in regard to its essential oil. Pamphlet, pp. 27. 4. On the "string bark" trees of N. S. Wales, especially in regard to their essential oils. Part I. Pamphlet, pp. 16. 5. On the pinenes of the oils of the genus eucalyptus. Part I. Pamphlet, pp. 14. All by R. T. Baker, Asst. Curator and Botanist, and Henry G. Smith, Chemist, Technological Museum, Sydney; and reprinted from the Journal and Proceedings of the Royal Society of N. S. Wales.

Author—1. On the cinnamums of New South Wales: with a special research on the oil of C. Oliveri, Bail. Pamphlet, pp. 10, with two plates. 2. On two well-known but hitherto undescribed species of eucalyptus. Pamphlet, pp. 9, with two plates. 3. On two new species of eucalyptus. Pamphlet, pp. 6, with two plates. All by R. T. Baker, Curator, Technological Museum, Sydney; and reprinted from the Proceedings of the Linnean Society of New South Wales.

Reviews.

Zur Geschichte des ehemaligen Arznei-Laborantenwesens im westlichen Erzgebirge von Dr. Joh. Aug. Ernst Koehler. Broschure, pp. 55. Verlag von Br. Fr. Guedsche, Schneeberg. 1898. M. 1.20.

If the history of the so-called patent medicines, that play such an important role in self-medication, were written it would unquestionably constitute an interesting chapter in the history of civilization of this country. To attempt this would, no doubt, be an enormous undertaking, but intelligent pharmacists might easily collect local material that would some day be of considerable historical value.

The author of this brochure has written the history of the industry of popular and secret medicines that were prepared in one small corner of Germany, viz. of the western "Erzgebirge," between Saxony and Bohemia. He shows how much interest there is attached historically to a subject which to-day is the bane of the druggist. The "Arznei-Laboranten" are dead and burried, but they have been resurrected as industrial barrons in this country. The same problems confront us to-day that worried the sanitary police a hundred and more years ago, with this difference, however, that the modern patent medicine manufacturer is a much more powerful man than his prototype the "Arznei-Laborant."

The subject is discussed in five chapters, viz.: 1. The beginning of the drug commerce in the western "Erzgebirge"; 2. A list of the plants which were employed; 3. The "Arznei-Laboranten"; 4. The "Arzneiwaren- und Olitätenhändler"; 5. Branches of industry which developed out of the "Laborantenwesen."

Every pharmacist who reads German ought to read this brochure, not only because of its historic interest, but because it throws light on the present "patent medicine" situation. "There is nothing new

under the sun'' and we may be more inclined to learn a lesson or two from an historic problem that has found its solution, than from the present complex situation in which we are personally involved. The present situation, however, is much more complex and much more difficult of solution. *E. K.*

Poison Romance and Poison Mysteries. By C. J. S. Thompson. 8vo., pp. 255. The Scientific Press, Limited, London. 1899. 6 shilling.

In these days of specialization and practical knowledge it is sometimes pleasant to find a book devoted to the presentation of interesting facts not in themselves worth knowing. The papers by Dr. Thompson, collected in this volume, are evidently the result of leisure hours spent in the investigation of facts related to the author's vocation, but so far removed that they were taken up purely as a recreation. Perhaps the word 'investigation is misleading, for the method is not at all that of the research student. The book simply presents in convenient rather than logical grouping a large number of curious facts that could have been acquired only in the course of wide reading.

These facts have been referred to as not worth knowing, but in one sense this is hardly a fair statement. The student of literature or history is glad to remember that the wine offered to Christ on the cross is supposed to be of mandragora mingled with myrrh, or that aconite was used with hemlock in the poison cup of the Greeks, or that Shakespeare's description of the death of Juliet is an accurate portrayal of the effects of mandragora wine. Statements such as these, which the ordinary reader might or might not chance upon elsewhere in a lifetime, are found plentifully in the earlier and later chapters of the book—such as those on Poisons and Superstitions, Royal and Historic Poisoners, Concerning Arsenic, and Poisons in Fiction. Of less value are the chapters that deal with various notorious poisoning cases of recent times. Just now the American reader may be willing to refresh his memory regarding the Maybrick case—which, by the way, the author treats in a manner favorable to Mrs. Maybrick; but, on the whole, this part of the book is a little too suggestive of the Police Gazette and the more sensational of our daily papers.

The reader will be disappointed if he is misled by the fact that this book was written by a scientist, and is reviewed in a scientific

journal. It is not scientific either in subject or in treatment; it is by no means exhaustive of its field: but judged for what it evidently claims to be—a contribution to the literature of the curious, easily written, and offered in a pleasing mechanical form—it is worthy of reading on a summer's half-holiday, and of a permanent place on the library shelves. *W. B. Cairns.*

PRACTICAL MATERIA MEDICA FOR NURSES with an appendix containing poisons and their antidotes, with poison emergencies; mineral waters; weights and measures; dose list; and a glossary of the terms used in Materia Medica and Therapeutics, by Emily A. M. Stoney, Author of "Practical Points in Nursing" etc. W. B. Saunders, Philadelphia. 1899. 8vo., 306 pages. $1.50 net.

This book is intended to give briefly in the most practical form the source of drugs, their action and uses, dosage, and the symptoms and treatment of poisoning. It consists of notes of a series of lectures prepared with especial reference to the needs of nurses.

Part one deals with general considerations such as methods of medication and a therapeutical classification of drugs with the citation of numerous examples under the different headings.

Part two comparises the main body of the work. Subjects are arranged alphabetically with cross references when necessary. As has been stated, only the facts most important from the standpoint of the nurse find place. Synthethics and other remedies of more recent date receive mention. Synonyms are frequently given.

Part three is made up of tabulated information valuable to the nurse, treatment for poisons, a glossary of technical terms and similar features.

The subject matter of the book must of course be limited in volume and seems to be well selected. It doubtless corresponds to a want and will probably be of decided value to nurses.

The paper used is poor, but the type is large and clear and the binding good. *Rodney H. True.*

MISSOURI BOTANICAL GARDEN. Tenth Annual Report. St. Louis, Mo. Published by the Board of Trustees. 1899.

To all who were conversant with the plans and purposes of the Missouri Botanical Garden at the time of the death of Mr. Shaw, its founder, each report as it has appeared since that time, indicating progress toward the ideal, has been received with much interest.

The tenth report now at hand is a source of gratification to all interested in botany. The trustees report a steady increase in the income of the Garden from rentals. Improvements amounting to about $45,000 have been made on the grounds and a surplus of over $14,000 remains for the year of 1899.

In his report the Director, Dr. William Trelease, reviews briefly the purposes for which the Garden was established and sketches in outline, the results of the decade closed. The Garden has steadily grown in all lines, the grounds, herbarium, library, and green-houses having been enlarged and improved. This account, to long too be quoted at length here, can not but be of great interest to all friends of botany. The different lines of instruction carried on here in the Shaw school of Botany where such rare facilities are at hand, are also outlined.

Two scientific papers are presented in this Report. One by F. Samson-Scribner, deals with the grasses of the Bernhardi Herbarium collected by Thaddeus Haenke and described by J. S. Presl. This valuable piece of work is illustrated by fifty-four plates. A sclerotioid disease of beech roots is described by Hermann von Schrenk. Two plates illustrate this paper.

A biographical sketch of Dr. E. Lewis Sturtevant, so prominently identified with agricultural and horticultural phases of botany, likewise the donor to the library of the Garden of the nucleus of its valuable pre-linnean library, is written by C. S. Plumb. The frontispiece of the volume is a portrait of the subject of the sketch.

The amount and nature of the work published from the Garden or based on work done by aid of its facilities is furnished by a list contributed by C. E. Hutchings. Sixty-eight titles appeared between January 1897 and December 1898.

The great value of the part of the library which deals with serial publications is shown by a list compiled by the Director. It will suffice to say that seventy pages of the Report are occupied by the titles of these periodicals.

Copious indices for Volumes I. to X. close the volume. This feature is greatly to be commended since it makes readily available a large amount of material.

It is the wish of all friends of botany, that this institution may continue its growth and rapidly realize the ideal of its generous founder.

Rodney H. True.

SUPPLEMENT.

Scientific Societies.

Calendar of Association Meetings for July.*

State.	Date.	Place.	Secretary.
Iowa	26–28	Clear Lake	A. H. Miles, Des Moines.
Maine	6	Portland	M. L. Porter, Danforth.
Montana	—	Butte	S. J. Coffee, Missoula.
Tennessee	18	Jackson	R. W. Vickers, Murfreesboro.
Virginia	18	Natural Bridge	C. B. Fleet, Lynchburg.

* According to Merck's Report.

American Association for the Advancement of Science. — The forty-eight annual meeting of the American Association for the Advancement of Science will be held at Columbus, Ohio, August 19th to 26th, 1899.

The Association headquarters will be located in Room 10, University Hall, Ohio State University, and the hotel headquarters of the Council of the Association will be at the Chittenden Hotel.

The opening session of the Association will be held at 10 o'clock A. M., on Monday, August 21st, in the Chapel, University Hall.

For all matters relating to local arrangements, transportation, and boarding-house accommodations, address the Local Secretary, Professor B. F. Thomas, Ohio State University, Columbus, Ohio.

For information relating to the presentation of papers members should address the Secretaries of the respective Sections. Titles and abstracts of papers should be sent to the Secretaries.

Members paying their assessment before August 15th will receive their tickets by mail at once, and will thus save time in registering on their arrival at Columbus, provided they bring their tickets with them.

The register for the Columbus meeting will be open at 2 o'clock P. M., on Thursday, August 17th, at the general offices, Room 10, University Hall.

Affiliated Societies: American Forestry Association. This Association will meet on Tuesday and Wednesday, August 22 and 23. Geological Society of America, Tuesday, August 22, at the same time and place with Section E. American Chemical Society. A General Meeting of the American Chemical Society will be held on Monday and Tuesday, August 21 and 22. The first session will convene immediately after the organization of Section C of the A. A. A. S., and in the same room in Townsend Hall on Mondap morning. On Monday afternoon at 4 o'clock the Society will give place to Section C, in ord.r that the Chemists may all have the opportunity of listening to the Vice President's address before that body. The whole of Tuesday will be devoted to the American Chemical Society, and the remainder

of the week to Section C. Society for the Promotion of Agricultural Science. The meetings of this Society will be held Friday and Saturday. Association of Economic Entomologists. This Association will hold its eleventh annual meeting on August 18 and 19. American Mathematical Society. This Society will meet on Friday and Saturday, August 25 and 26. Society for the Promotion of Engineering Education. This society will hold its next meeting August 17, 18 and 19. American Folk-Lore Society. This Society will probably meet with Section H on Thursday, August 24. Botanical Society of America. This Society will meet on Friday and Saturday, August 18 and 19. American Microscopical Society. This Society will meet August 16, 17 and 18.

The Royal Institution. — The centenary of this institute was celebrated with great éclat June 5. The founder, Sir Benjamin Thompson, afterwards Count Rumford, was born in Massachusetts on March 26, 1753. The chief objects of the institution were to be speedy and general diffusion of the knowledge of all new and useful improvements in whatever quarter of the world they might originate, the application of scientific discoveries to the improvements of manufactures in England, and to the increase of domestic comfort and convenience.

In 1801 Humphrey Davy was engaged in the service of the Institution. About the same time subscriptions fell off considerably, so much so that bankruptcy seemed imminent; hence the managers determined on a great reorganization. The projects of technical education were dropped, and the Royal Institution was transformed into a body for promoting experimental science and for diffusing every species of philosophical knowledge. Although the change was criticized by some, the Institution has been prosperous ever since, though no aid was received from either state or any public body. The most important addition to the laboratories was made about three years ago by the generosity of Dr. Ludwig Mond.

In connection with the centenary an interesting exhibition of historical apparatus had been arranged. Perhaps the most interesting relics were the pieces of apparatus employed by Sir Humphrey Davy in his researches on alkalies, and the collection of lamps with which he experimented in the effort to find a safety lamp for dangerous coal mines.

The commemoration lecture of Lord Rayleigh dealt principally with the work of Thomas Young, taking but incidental notice of Faraday, Davy, Tyndall, Frankland, Odling, and Gladstone, the other professors of the Institution, all of whom have gained for themselves and the Institution a world-wide reputation.

Whereas the first commemoration lecture was historical in character, the second, by Professor Dewar, took up some of the most recent work of the Institution (see Liquid Hydrogen, below).

Liquid Hydrogen. — One of the treats at the recent Royal Institute centennary was the lecture by Prof. Dewar on liquid hydrogen accompanied by a series of experiments. Whereas Lord Rayleigh had discussed the work of the Institute from the historic standpoint, Professor Dewar's object was to present the latest work

of the Institute, a new instrument of research-liquid hydrogen. This he exhibited boiling gently in a vacuum tube immersed in liquid air, the access of heat being by this precaution greatly impeded. It was a transparent liquid, in which, however, there appeared a whitish deposit. This, the lecturer explained, was solid air, and it was impossible to avoid its presence, because immediately the cotton-wool plug was removed from a vessel of liquid hydrogen the air of the atmosphere came under the influence of so low a temperature as to be at once frozen solid. To prove that the liquid he was manipulating was really liquid hydrogen Professor Dewar put a light to a small quantity, a brilliant burst of flame being the result. To demonstrate its exceedingly small density he showed that only the lightest material possible to be obtained, viz., pith, would float on its surface, while a material like cork would sink to the bottom as if it were lead. He illustrated the lowness of its temperature by a number of experiments. Thus a solid body immersed in it for a short time was shown to become so cold that the air round it was liquefied and ran off in drops, while when a tube containing liquid air was plunged into it the air immediately became solid. On this tube being lifted out again a double effect was seen, for the melting of the solid within it yielded liquid air, which was also formed by condensation on its outside surface. An empty vessel placed for a short time in the cold atmosphere just above this liquid filled with solid air in the form of snow, soon melting into liquid. Oxygen in a sealed tube when lowered into it quickly became solid, and when lifted out it could be seen, as heat was absorbed, to assume first the liquid and then the gaseous form. A sponge of porous material, soaked in liquid hydrogen and brought into a magnetic field, apparently behaved as if it were magnetic. That, however, was due to the condensation of the oxygen of the air, which of course was magnetic, and though an observer might in this way be easily deceived into thinking hydrogen magnetic, Professor Dewar said he was satisfied that it was nearly neutral or diamagnetic. Speaking of the real temperature of this liquid, he said it was 21 deg. on the absolute scale. It had taken him nearly a year to come to a definite conclusion on that point, because he could not get any two thermometers to agree. Pure platinum resistance thermometers gave 35 deg. absolute (or 238 deg. below zero Centigrade), one of platinum-rhodium alloy 27 deg., while hydrogen itself in a gas thermometer gave 21 deg., a reading nearly identical with one obtained with a German silver electrical thermometer. The last part of the lecture was devoted to the extraordinarily low vacua obtainable by the use of liquid hydrogen. Thus by immersing one end of a closed tube in it for a short time and then sealing it off in the middle, a vacuum was formed in the upper part which was substantially perfect, as was shown by the fact that the electrical charge could not be made to pass. In conclusion Professor Dewar, after exhibiting several other beautiful experiments, including one to illustrate the rapidity with which gases were discharged into a vacuum, claimed that the liquefaction of hydrogen was a triumph for theory as well as for fact.

Professional.

Selling Patients.*—"The practice of some physicians in turning over patients to a specialist and exacting a fee from them for so doing has, we think, become increasingly common. In a city not a thousand miles from the editorial office of Medicine we know it to be a common practice for certain specialists to divide the fees derived from patients with the practitioner who sends the case. How common the practice is we are unable to say, but we know that it is openly discussed in gatherings of medical men. It is especially stated that the practice is very common among our surgical *Confrères*. It is claimed that even those who devote special attention to internal medicine are not averse to now and then dividing up a plethoric consultation fee.

Two prominent eastern journals have discussed the matter, but they do not seem to have found anything very iniquitous in the practice, though they admit that there may be some difficulty in adjusting a proper division of the spoils and thus friction may be created between the practitioner and the specialist. The practice has found a defender in Melville Black, of Denver, who argues in the Colorado Medical Journal in favor of the payment of a fee by a specialist for referring a patient. C. L. Greene, of St. Paul, in a letter to the New York Medical Journal, strongly condemns this proposition, as he says the fee must be given secretly, and the patient, if he knew of the transaction, would feel little confidence in 'the specialist who purchased him, and would have lost all regard for the family physician who sold him.'

The Northwestern Lancet in commenting upon this subject says: 'There is more of this buying and selling of patients going on secretly than is generally known. In more than one direction in this neighborhood have offers been made by specialists to hand back to the general practitioner a percentage of the fee from cases referred for operation.'

The very comments that have been made upon this proposition are sufficient to show that the practice is by no means rare. In the city which we have stated was not far from the editorial sanctum, we have known of cases in which practitioners have gone to several surgeons to learn where the largest division of the fee could be obtained. Undoubtedly these were extreme instances; that the practice is very common even in its milder form we do not believe.

There can be no question that this practice is to be condemned. Nothing that is fair, just or equitable can be found in such an arrangement. The writer of this editorial upon one occasion was betrayed into a transaction of this kind. It was done hurriedly and without thought of the equities of the case. Since then he has not been, and he thinks for all time to come he will never be, betrayed into a similar arrangement.

No one who watches the tendencies of professional life can fail to see that commercialism is rapidly spreading in the ranks of the profession. Whether this tendency is good or bad we shall not now attempt to say, but the practice of selling patients is one which would be condemned by even the most rudimentary system of business ethics."

* From Medicine, p. 49.

Pharmaceutical Review.

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Editorial.

In the August number of Popular Science Monthly, Professor Edward Orton, President-Elect of the American Association for the Advancement of Science, discusses the "proper objects" of this association. He emphasizes the fact that the need of bringing men, engaged in the numerous branches and subbranches of science, together is greater than ever. Just at present there seems need for such emphasis. Where e. g. formerly a single biological section, comprising zoology as well as botany, seemed to suffice the social scientific demands, there exist to-day, in addition to a distinctive botanical section, several botanical societies and clubs, which are national in character and each of which claims to fill a particular want. With such decentrallization, due in part to greater specialization, the need of bringing scientists together in a central organization is greater than ever. If the danger lay simply in the disintegration of the A. A. A. S., this might be counted light. But this association stands for the unity of American science, and this means vastly more. To use Professor Orton's words: "The foremost men in all societies, our leaders in the branches represented there, owe it to themselves, owe it much more to the great name of American science, to maintain and magnify their connection with, their service to, the American Association."

Not only in this country, but in Europe as well, pharmacists have had little or no affiliation with these national central as well as general societies. This, no doubt, has been partly due to the fact that in England and in this country pharmacy was for a long time

almost exclusively taught in separate colleges. The addition of pharmacy to the curriculum of our larger institutions, and the commercialization of the calling of the pharmaceutical practitioner have brought about a decided change. The closer affiliation of the teacher of pharmaceutical chemistry with the professor of general chemistry at our universities has naturally affiliated the former with chemists at large. So with the pharmaceutical botanist and pharmacognosist, etc. On the other hand, the commercialization of pharmacy in Germany, and the consequent lack of interest in scientific topics shown by the German Apothecaries Society, has thrown German pharmaceutical scientists as a body into the camp of the "Verein deutscher Naturforscher und Aerzte." A similar reaction has taken place in Switzerland and other European countries. It is also making itself felt here.

It was strikingly noticeable that not only fairly numerous representatives of the younger university element, but several past presidents of the American Pharmaceutical Association attended the Boston meeting of the A. A. A. S. last year and not the Baltimore meeting of the A. Ph. A. This is a striking sign of the times, which he who will run may read. The American Pharmaceutical Association has much to gain and nothing to lose by closer affiliation with men of science in general. Once more we, therefore, recommend this subject to the thoughtful consideration of American pharmacists who have the welfare of their calling at heart. A part of Professor Orton's address will be found on another page (379) of this journal. *E. K.*

Christ as Apothecary.

That Moses and his sister Miriam, also other representatives of the Sacred Scriptures have figured in alchemistic writings, is generally known to students of the history of chemistry. That the person of Christ should have been used in similar capacity to lend dignity to a calling may not be commonly known. Indeed very few apothecaries may have known that their calling has thus been idealized in a painting, inartistic though it may be in execution. The painting referred to has recently been rescued from oblivion by Mr. W. L. Schreiber of Potsdam, to whom we are also indebted for the tracings

of the death dance figures reproduced in last month's Review. The original is to be found in the church at Werder where it was discovered, one might well say, by Mr. Schreiber in a very dusty condition, well nigh forgotten. At his instigation it was cleansed and restored. Before being put back in position he had it photographed.

It is due to his kindness in remembering the writer with a copy of the photograph, that we are able to reproduce it for the benefit of the readers of the Review. A copy of the painting is to be found in the church at Plötzin, near Werder. Mr. Schreiber is of the opinion that the painting belongs to the beginning of the eighteenth century. That the painter was no great artist becomes apparent, e. g. from the left arm, which is misdrawn. The colors, however, are said to be

good. It is supposed that some pious apothecary donated both paintings. Though no artistic treasure, the painting is one that must naturally appeal to every pharmacist whose "love of profession" is not solely influenced by the almighty dollar.

Christ is represented in a conventional manner as far as features and dress are concerned, but is surrounded by a number of apothecary's containers and in the act of weighing. In the left hand he holds a pair of hand scales. The one scale pan evidently contains a weight or weights. Whether these are of the conventional form or whether they are symbolized does not become apparent even from the original photograph. The other scale pan contains small crosses which have been taken with the right hand from a jar marked "Kreutz Mintz", "cross mint".

The containers bear the labels "Geduldt", patience; "Hoffnung", hope; "Liebe", love; "Bestendigkeit", steadfastness; "Hülffe", help; "Friede", peace; the one to the extreme right: "Gnade", grace; and the small flask on the centre block: "Glaube", faith, evidently containing the most precious drug of all.

The three scriptural passages quoted on the standard are here with reproduced, both in the German of Luther's translation, and in the English of King James' Version.

I. Isaiah, 55, 1. "Wohlan, Alle, die ihr durstig seid, kommt her zum Wasser, und die ihr nicht Geld habt, hommt her, kaufet und esset; kommt her und kaufet ohne Geld und umsonst beides, Wein und Milch."	"Ho, every one that thirsteth, come ye to the waters, and he that hath no money; come ye, buy, and eat; yea come, buy wine and milk without money and without price."
II. Isaiah 55, 6. "Suchet den Herrn weil er zu finden ist. Rufet Ihn an weil er nahe ist."	"Seek ye the Lord while he may be found, call ye upon him while he is near."
III. Psalm 50, 15. "Und rufe mich an in der Noth; so will ich dich erretten, so sollst du mich preisen."	"And call upon me in the day of trouble: I will deliver thee, and thou shalt glorify me."

Whereas the above are taken from the Old Testament, the following scriptural passages inscribed on the block are taken from the New:

I. Matthew 11, 28. "Kommet her zu mir alle, die ihr mühselig und beladen seid, Ich will euch erquicken."	"Come unto me, all ye that labour and are heavy laden, and I will give you rest."

The fourth line on the painting is taken from the last part of the twenty-ninth verse:

..... "so werdet ihr Ruhe finden für eure Seelen." ..... 'and ye shall find rest unto your souls."

The last quotation is made up of the second half of each of verses 12 and 13 of chapter 9 of the gospel according to St. Matthew.

II. Matth. 9, 12....."Die Starken bedürfen des Arztes nicht, sondern die Kranken." ....."They that be whole need not a physician, but they that are sick."

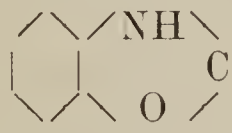
v. 13 ..... "Ich bin gekommen, die Sünder zur Busse zu rufen, und nicht die Frommen." ....."for I am not come to call the righteous, but sinners to repentance."

E. K.

Local Anesthetics.*

By *G. Cohn.*

The following local anesthetics belong to the aromatic series and are derived either from bases, as for example formanilid, holocain and orthoform, or from phenols as guaiacol, eugenol, eugenol-alcohol and eugenol-acetanilid.

Formanilid. The most convenient method of preparation consists in boiling together equivalent quantities of anilin and concentrated formic acid for several hours in a container connected with a reflux condensor; the resulting product is then fractionated under reduced pressure. Formanilid crystallizes in long colorless prisms which melt at 46° C. In the organism of the dog, in which it is converted into ortho-oxy-carbanil  CO. It produces at first a transient, later a continued lowering of the blood pressure, and increase of respiration frequency. The administration of formanilid as an antipyretic is not without some attending danger. Its local anesthetic value was first discovered by Meisels who found it to be very useful when applied in 2 percent solution in luetic and ulcerative

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* Translated from the Phar. Centralhalle, Vol. 40, p. 33, by Professor V. Coblentz of the New York College of Pharmacy. The translation is free, with omission of such data as might be already familiar to readers, and of superfluous details.

Continued from page 312.

processes of the pharynx, tongue and mucus surfaces of the mouth. This remedy has not received any further attention, since under certain circumstances it produces continued cyanosis.

To the holocain group belong a number of anidin and guanidin derivatives, all of which are derived from methylene-amido-phenol-ether ($CH_2{=}N{-}C_6H_4{-}OR$), thus:

$$CH\begin{cases} N{-}C_6H_4{-}OC_2H_5 \\ NH{-}C_6H_4{-}OC_2H_5 \end{cases}$$

$$CH_3{-}C\begin{cases} N{-}C_6H_4{-}OR \\ NH{-}C_6H_4{-}OR \end{cases}$$

$$C_6H_5{-}NH{-}C\begin{cases} N{-}C_6H_4{-}OR \\ NH{-}C_6H_5 \end{cases}$$

Holocain "par excellence" was discovered by Ernst Täuber. In this interesting body he found that the nucleus phenetidin, which heretofore had been prized as yielding an antipyretic and sweetening agent, to possess also new physiological possibilities, that of yielding local anesthetic derivatives.

Methenyl-para-phenetidid $C_6H_4\begin{cases} OC_2H_5 \\ NH{-}CH{=}N{-}C_6H_4{-}OC_2H_5 \end{cases}$ is obtained by interaction between ortho-formic ester and phenetidin. It forms crystals which melt at 114° C.; the analogous para-anisidin base melts at 119° C. Both substances are not alone local anesthetics but are said to be able to prevent sea-sickness. Holocain and its analogues are the result of a condensation of phenetidin and phenacetin:

$$C_6H_4\begin{cases} OC_2H_5 \\ NH_2 \end{cases} + C_6H_4\begin{cases} OC_2H_5 \\ NH.CH_3CO \end{cases} = H_2O + CH_3{-}C\begin{cases} N{-}C_6H_4{-}OC_2H_5 \\ NH{-}C_6H_4{-}OC_2H_5 \end{cases}$$

It forms white crystals which melt at 121° C. and are readily soluble in alcohol, but only to the extent of 1 part in 50 of water. With sodium hypochlorite this solution gives a flesh colored solution, and yields a violet precipitate, which is dissolved by ether with a burgundy-red gradually changing to a green, thus distinguishing holocain from cocaine and eucaine. The hydrochlorid of holocain is soluble in cold water to the extent of 2.5 percent, the solution possesses neutral reaction and faint bitter taste. This body being a strong base yields well defined crystals with the various acids. In distinction from cocaine, holocain is antiseptic. 0.01 gm. when injected subcutaneously produces such strong convulsions in guinea pigs that its external application only is possible. Three to five drops of a 1 percent solution when applied to the cornea produce a slight burning sensation which lasts but a minute and is followed by complete anesthesia; the conjunctiva are not so thoroughly affected.

Untoward or unpleasant side effects have not been noted. Guttmann and Loewenstann have employed holocain successfully in various operations upon the eye.

Alfred Einhorn observed that the amido-oxy-benzoic esters generally possess local anesthetic properties, among these he recommended more particularly the para-amido-meta-oxybenzoic methyl ester, known under the title of orthoform. The esters of meta-amido-p.-benzoic acid may be prepared by passing dry hydrochloric acid gas through a methyl alcohol solution of the sulfate of the respective amido-acid and then treating the hydrochlorid of the ester with soda, or the corresponding nitro-compound may be reduced. The para-amido-meta-benzoic esters may be prepared by reducing the para-nitro-meta-oxybenzoic acid to an amido acid which is then converted into an ester in the usual manner. The following esters all of which possess local anesthetic properties to a greater or lesser extent, are prepared in the general manner as above indicated:

p.-amido-salicylic methyl ester, needles, m. p. 96° C.
p.-amido-salicylic ethyl ester, needles, m. p. 145° C.
p.-amido-benzoyl-salicylic methyl ester, scales, m. p. 180° C.
o.-amido-salicylic-methyl ester, needles, m. p. 90° C.
o.-amido-salicylic-ethyl ester, needles, m. p. 47° C.
p.-amido-m.-oxybenzoic-methyl ester, needles, m. p. 120° C.
p.-amido-m.-oxybenzoic-ethyl ester, scales, m. p. 98° C.
o.-amido-m.-oxybenzoic-methyl ester, needles, m. p. 153° C.
m.-amido-p.-oxybenzoic-methyl ester, needles, m. p. 142° C.
m.-amido-p.-oxybenzoic-ethyl ester, needles, m. p. 100° C.
m.-benzoyl-amido-p.-oxybenzoic-methyl ester, scales, m. p. 241° C.
m.-amido-p.-benzoyl-oxybenzoic-methyl ester, needles, m. p. 158° C.
m.-amido-anisic-methyl ester, hydrochlorid, m. p. 213° C.
amido-o.-cresotinic-methyl ester, needles, m. p. 115° C.
amido-o.-cresotinic-ethyl ester, needles, m. p. 112° C.
amido-m.-cresotinic-methyl ester, needles, m. p. 95° C.
amido-p.-cresotinic-methyl ester, needles, m. p. 85° C.
amido-p.-cresotinic ethyl ester, needles, m. p. 215° C.
amido-m.-oxy-p.-toluic-methyl ester hydrochlorid, scales, ——
amido-m.-oxy-o.-toluic methyl ester, needles, m. p. 125° C.
amido-m.-oxy-o.-toluic, ethyl ester, needles, m. p. 94° C.
amido-proto-catechuic ethyl ester hydrochlorid, needles, m. p. 221° C.
amido-guaiacol-carboxylic methyl ester, needles, m. p. 130° C.

amido-vanillic-methyl ester I—II, needles, m. p. 103° C.
amido-m.-dioxy-benzoic-methyl ester, yellow prisms, m. p. 183° C.
amido-m.-dioxy-benzoic-ethyl ester, yellow warty mass, m. p. 157° C.
amido-mono-methyl-m.-dioxy-benzoic methyl ester, yellow needles, m. p. 140° C.
amido-di-methyl-m.-dioxy-benzoic methyl ester hydrochlorid, prisms, m. p. 172° C.
amido-naphtol-carboxplic-methyl-ester, yellow prisms, m. p. 106° C.
o.-oxy-quinolin-carboxylic-ethyl-ester, compact crystals, m. p. 87° C.
p.-benzoyl-oxy-m.-nitro-benzoic-methyl-ester, neeles, m. p. 95° C.
phenyl-amido-acetic methyl ester, needles, m. p. 32° C.
p.-quinolin-carboxylic-ethyl ester.

Orthoform which is prepared by the Höchster Farbenwerken forms a white voluminous, inodorous and tasteless crystalline powder. It is only soluble in water to the extent of a trace and according to its constitution, it gives the reactions of the amido-phenols; that is with oxidizing agents, red to violet colorations. With solutions of silver, reduction takes place with formation of a mirror. When given internally orthoform causes a considerable increase in the formation of the ether sulfuric acids and a portion passes unchanged through the organism. It possesses antiseptic properties. Owing to the slowness with which orthoform is absorbed, a prolonged local anesthesia results. The readily soluble hydrochlorid of orthoform reacts strongly acid hence can but seldom be employed. In case of burns and painfull swellings a 10 percent ointment is best adapted. Orthoform hems the secretions, is absolutely non-toxic and can be applied regardless of quantity. By dusting laryngeal ulcers, the pains may be stilled for 24 hours. Loss of sensation begins within 5 minutes and lasts usually in most cases about 35 hours. Good results have attended its application in the lesser gynecological operations. Less satisfactory has been its history in the treatment of affections of the bladder. In performing Schleich's infiltration anesthesia, it is very expedient to dust the wound with a mixture of equal parts of orthoform and boric acid to prevent afterpains. According to reports, the results attained with orthoform are not equalled by any of the the other local anesthetics.

Owing to the insolubility of this compound it cannot be employed subcutaneously, however a substitute in the form of nirvanin a member of the orthoform group, has been found. This body repre-

sents a complex glycoll derivative $C_6H_3(OH)(COOCH_3)NHCOCH_2N(C_2H_5)_2HCl = 1:2:5$. which forms white needles melting at 185° C. It is readily soluble in water, with neutral reaction and gives a violet color with ferric chlorid. Complete anesthesia takes place only when employed subcutaneously or applied to wounds or ulcers.

Nirvanin is adapted to Schleich's method when applied in dental surgery but not in ophtalmology owing to its irritating action. In a 1 percent. solution it is a strong antiseptic and is almost non-toxic.

Frequent references have been made to the local anesthetic power of antipyrin which has been used in treatment of affections of the nose, pharynx and larynx. Owing to its comparative feeble action it will, however, never reach any extended use.

Among the phenols which possess local anesthetic powers, eugenol and guaiacol, are excellent examples. As is well known the monivalent phenols possess a strong caustic action, while in the bivalent phenols this is enfeebled to such an extent that their local use is possible. Clove oil, which has been employed as a relief for toothache from the earliest times, owes its anesthetic action entirely to the eugenol present. Although eugenol can be obtained in the market in pure condition, it should not be given the preference over clove oil as a local anesthetic, owing to the presence of about 10 percent of a neutral terpene in the latter which acts as a dilutent for the caustic eugenol.

In the endeavor to remove this irritating effect of the eugenol, while still retaining its anesthetic power chemists have prepared derivatives by replacing the hydrogen of the hydroxyl group with other groups. Among such compounds which have been thus prepared is Eugenolacetamid, the preparation of which is indicated by the following formulas:

$$\begin{matrix} C_3H_5 \\ CH_3O \end{matrix}\!>\!C_6H_3\!-\!OH; \qquad \begin{matrix} C_3H_5 \\ CH_3O \end{matrix}\!>\!C_6H_3\!-\!O\!-\!CH_2\!-\!COOH;$$

Eugenol. Eugenol Acetic Acid.

$$\begin{matrix} C_3H_5 \\ CH_3O \end{matrix}\!>\!C_6H_3\!-\!O\!-\!CH_2\!-\!CO\!-\!NH_2.$$

Eugenol-Acetamid.

It occurs in crystals or glossy scales melting at 110° C., and possesses antiseptic as well as local anesthetic action. Success has evidently not attended the introduction of either eugenolacetamid or eugenol carbinol $\left(\begin{matrix} C_3H_5 \\ CH_3O \end{matrix}\!>\!C_6H_2\!<\!\begin{matrix} OH \\ CH_2OH \end{matrix}\right)$ which results from interaction between eugenol and formaldehyde.

Guaiacol, which has only of late years been presented in crystalline condition, melts at 33° C., and boils at 205.1° C. The caustic properties of the liquid product are entirely absent in the pure substance. It has proven itself to be serviceable in minor surgical operations, in the extraction of teeth, burns etc. Guaiacol acts slower and deeper than cocaine, shows no side effects and is especially recommended in form of an ointment, or dissolved in oil (1:20). Lately the calcium salt of a guaiacol-sulfonic acid has been introduced as a local anesthetic under the title of Guaiacyl. This forms a grayish powder soluble in water, and has been recommended by O'Followell in dentistry and minor surgical operations.

With the list already cited the modern physician is abundantly supplied with local anesthetics, some of which undoubtedly present advantages over cocaine; however, it is very questionable if this latter remedy will ever be supplanted. Without doubt a number of anasthetics will come into use alongside of cocaine, each one being adapted to certain cases under conditions peculiar to itself, thereby increasing the resources of the physician. Owing to the fact that all of these synthetic local anesthetics are cheaper than cocaine, we have sufficient assurance that they will find a ready introduction.

Laboratory Notes in Pharmacognosy. II.

By *Rodney H. True.*

Cochineal.

The general appearance of a large part of the commercial cochineal seems to indicate a sufficient foundation in fact for the general supposition that this article is subject to gross sophistication. Accordingly Mr. Ed. Koske, '98, examined a number of specimens bought in the open market in various parts of the state. The general appearance of the drug was noted, the amount of water lost on drying at 100°, and the ash remaining after incineration. In a number of cases the nature of the adulteration was made out.

No. 1. Surface plainly dusted over with some light colored, very fine powder. Lines marking segments or other structural features of the insects plainly marked. Rarely small angular or irregular masses

occur, likewise dusted over, but when broken seem to be inorganic. In structure, shape and size resembling cinders. Barium salt shown to be present.

No. 2. Evidences of being dusted over with some light colored powder seen in depressions in many insects, in many, entire insects having a dark reddish color. Apparently very nearly pure.

No. 3. Surface heavily coated with a brittle, somewhat shining covering of a substance under the microscope occurring in transparent pieces, insoluble in water. Structural lines of insect, often much obscurred, the depression being completely filled. A reddish appearance cast over the sample by the presence in addition to the brittle crust of a finely divided reddish substance. A very badly adulterated sample. Presence of iron shown, the main adulterant not identified.

No. 4. General appearance very similar to No. 3, less of the reddish substance present, giving to sample a much lighter color. Coating a brittle crust which breaks away in large pieces. A small amount of iron present, main adulterant not identified. A very badly adulterated specimen.

No. 5. Grayer than foregoing specimen, insects very unevenly coated, some being but slightly covered, others losing all form under the crust covering them. Coating hue clinging quite tenaciously to the insect, less glossy in appearance when seen under lens. Strongly adulterated.

Ash Determinations of Cochineal.

1.	.....	30.2
2.	.....	23.8
3.	.....	20.1
4.	.....	19.1
5.	.....	7.2
6.	.....	34.0
7.	.....	35.0
8.	.....	12.0

Mr. Charles Gorr, '99, also collected and incinerated a number of commercial samples of cochineal with very similar results. His specimens were all obtained from retailers doing business in either Milwaukee or Madison, Wis. It is hardly necessary to give a detailed description of the external appearance, the above types in general occurring here also.

The numerical results obtained are given in the following table, Mr. Koske's specimens including No. 1 to 5 inclusive, Mr. Gorr's the remaining numbers.

No. of sample.	Percent water lost at 100° C.	Percentage of ash calculated on dry drug.
1.	5.0	15.0
2.	5.0	3.6
3.	4.5	36.8
4.	6.7	26.4
5.	6.1	34.2
6.	—	30.2
7.	—	23.8
8.	—	20.1
9.	—	19.1
10.	—	7.2
11.	—	34.0
12.	—	35.2
13.	—	12.0
	5.5 percent av.	22.7 percent av.

Various authors who have studied cochineal place the normal ash between 3 and 6 percent as a maximum limit. The U. S. Pharmacopœia gives 5 percent as the maximum ash.

The situation existing in the group of samples here described is not exaggerated, I believe. The specimens of this drug in the pharmacognostical collection of this school appear to be sophisticated as badly as those discussed.

It seems to be beyond question, that cochineal is one of the most grossly adulterated drugs on the market. Since a simple ash determination suffices to demonstrate it, assuming that the examination of superficial appearance was not characteristic enough, it seems difficult to explain the toleration of this aspect of fraud.

Arnica Root.

Samples of arnica root obtained during the last three years aroused suspicion by their heterogeneous appearance. In a small sample as many as half a dozen different kinds of root could be detected without especially critical study.

Mr. W. S. Ferris, '98, examined superficially the structure of the various kinds of root system found in a small sample, and came to the conclusion that it was very doubtful if *Arnica montana* itself was present at all. Four forms contained resin reservoirs, but dif-

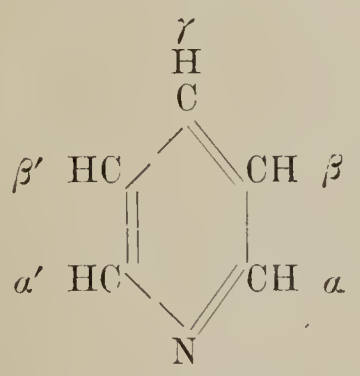
fered in their number, size and position; the extent of woody development also varied very greatly. Two forms were entirely devoid of resin reservoirs and doubtless derived from plants not closely related to the arnica. In the lot examined, a type agreeing in many ways with the genuine article but differing in having a very much greater development of wood and narrow medullary rays, was found. It was thought possible that arnica might assume this appearance, although specimens plainly genuine never were seen to do so. If this doubtful form were arnica, it would leave nearly the entire bulk of the specimen false.

Other specimens received from other wholesalers under the name of arnica or Vermont arnica were found to have the same mixed character. Rhizomes having a perpendicular direction of growth as well as those of the horizontal type. One form consisted of a short, upright rhizome and many crowded roots of a pale color entirely different from the genuine article. No resin reservoirs were found in this type. Another had a short rhizome and a few rootlets, in color nearly black, fibrous remnants of decayed leaf bases giving the drug a somewhat hairy aspect.

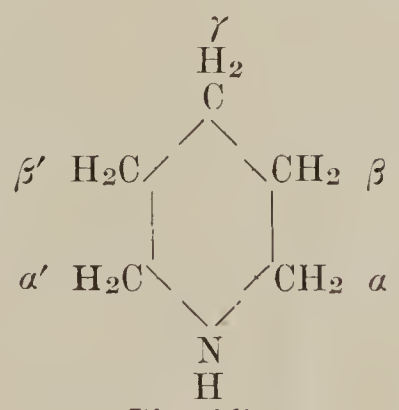
The Letter A: its Meaning in Pharmaceutical Literature.*

By *Edward Kremers.*

a. With reference to pyridine and hexa hydro-pyridine or piperidine, the position *a* or *a'* indicates the carbon atom next to the nitrogen atom of the respective nuclei or rings as indicated by the accompanying structural formulas. In the piperidine molecule



Pyridine.

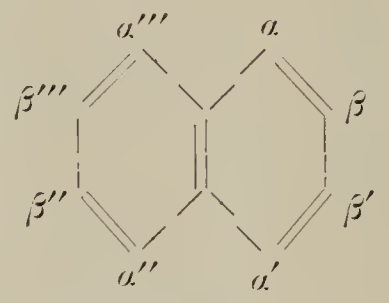


Piperidine.

* Continued from p. 112.

with its methylene groups (CH_2) there are two *α* and two *α′* positions because of the two displacable hydrogens. The corresponding position in the quinoline nucleus has already been indicated structurally; see under "a" as abbreviation for ana.

α. With reference to naphthalene there are four *α* positions as indicated by the accompanying structural formula. Inasmuch as all four are of like substitution value in mono substitution products, *α* alone is made use of in these, e. g. *α*-naphthol, $C_{10}H_7OH$, or *α*-naphthylamine, $C_{10}H_7NH_2$. In di-alpha substitution products it is necessary to designate each position by *α′*, *α″* and *α‴* or by using numbers.



α. Like the letter A, *α* is sometimes used to distinguish between different chemical substances that may e. g. be therapeutically related and are known commercially by otherwise the same name, e. g. *α*-eucaine and *β*-eucaine.

α. Sometimes the same means is resorted to in order to distinguish between compounds of the same chemical composition, but which are different in one or several of their physical properties, in other words between physical or stereochemical isomers, e. g. *α*-limonene nitrosochloride and the *β*-limonene nitroso-chloride.

α. It has long been customary to distinguish between various constituents of resins of which it was not even known whether they were chemical uni s or complex mixtures, by designating them *α*, *β*, *γ* etc., the destinction being based on a generally adopted means of separation of these single constituents or mixtures. Thus there are *α*-resins, *β*-resins etc.; *α*-resin acids, *β*-resin acids etc.

A.B.C.-Process. A process suggested by W. & B. Sillar & W. G. Wigner for the purification of waste waters. It derives its name from the ingredients used, viz. **a**lum, **b**lood and **c**lay.

In **Medicine** the following may be recorded though some are apparently but little used:

a., abbreviation used in otology, for "applied to or in contact with auricle."

A., or **An.,** abbreviation, used in electrotherapy, for anode.

A. C., abbreviation, used 1. in otology, for air-conduction; 2. in electrotherapy, for anodal closing.

A. C. C., abbreviation, used in electrotherapy, for anodal closure contraction.

A. C. O., **A. C. P.**, **A. C. S.** Abbreviations, used in electrotherapy, for anodal closing odor, a. c. picture, and a. c. sound respectively.

A. D., abbreviation, 1. in otology, for *auris dextra*, right ear; 2. in electrotherapy, for anodal duration.

A. D. C., abbreviation, used in electrotherapy, for anodal duration contraction.

A. M., abbreviation, used in electrotherapy for Ampère-meter.

A. O., abbreviation, 1. in hygiene and sanitary law, for abatement order; 2. in electrotherapy, for anodal opening.

A. O. C., **A. O. O.**, **A. O. P.**, **A. O. S.** Abbreviations used in electrotherapy, for anodal opening contraction, a. o. odor, a. o. picture, and a. o. sound respectively.

a. p., abbreviation, used in hygiene and sanitary law, for ash-pit.

A. S., abbreviation used in otology, for *auris sinistra*, left ear.

Of **Bibliographic** import are the following abbreviations:

A. Abbreviation for *Pharmacopœa austriaca*. The Roman numeral after the A stands for the edition. In price-lists* e. g. *Acetum* A VII means that the standard of the article is that of the seventh edition of the Austrian pharmacopœia.

A. Abbreviation for Annals, Ger. *Annalen*, Fr. *Annales*. In German treatises it frequently stands for Liebig's *Annalen der Chemie*.† The French Annals or *Annales de Chimie et de Physique*, in order to distinguish them from the German are usually abbreviated as:

A. ch. in German and English treatises.

A as abbreviation for Archives, Ger. *Archiv*, Fr. *Archives*. To distinguish the various archives from one another, the following short abbreviations have been suggested:

A. d. P. Archives de Physiologie normale et pathologique (Paris).

A. i. B. Archives italiennes de Biologie (Turin).

A. g. P. Archiv für die gesammte Physiologie (Bonn).

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* Pezold & Suess, Vienna,

† Beilstein:

A. P. P. Archiv für experimentelle Pathologie und Pharmakologie (Leipzig).

A. P. Archiv für (Anatomie und) Physiologie (Leipzig).

A. A. P. Archiv für pathologische Anatomie und Physiologie (Berlin).

As abbreviations of **Societies,** scientific and professional, the following are in use:

A. P. A., since 1894 **A. Ph. A.,** abbreviation for American Pharmaceutical Association. Inasmuch as the names of state pharmaceutical associations are usually abbreviated in like manner, e. g. W. P. A. for Wisconsin Pharmaceutical Association, the abbreviation for Alabama Pharmaceutical Association should possess some distinguished feature, e. g. Ala. P. A.

A. A. A. S., or **A³S.,** abbreviation for American Association for the Advancement of Science.

The above list is far from being complete. This attribute applies not only to botany, bacteriology and other sciences omitted altogether, but also to the subjects included. The writer hopes, at some future time to complete the list and to take up the other letters of the alphabet in the same manner. He also hopes that persons who find this list at all useful will call his attention to both omi sions and errors. It is only in this way that we may hope to ultimately obtain a complete list which ought to prove very serviceable.

MONTHLY REVIEW.

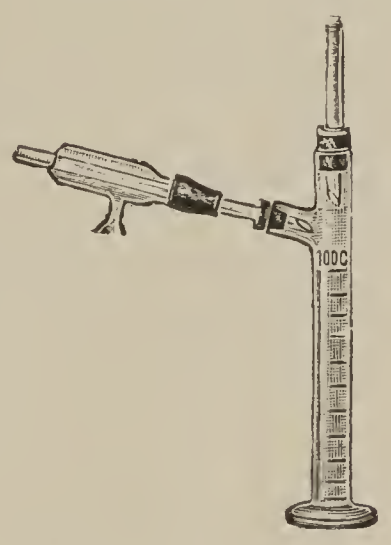
Pharmaceutical Technique.

The Relative Efficiency of Various Forms of Distilling Tubes for Fractional Distillation.—Sydney Young has made a study of this subject and draws the following conclusions. The two main requirements in a still-head are 1) that it shall not contain too much condensed liquid; and 2) that it shall be available for small quantities. The plain vertical still-head is the worst form, because as the vapor passes upwards the center portions may not come in contact with the condensed liquid. Thorough contact is, however, necessary for efficient fractionation. Greater width of tube does not increase the efficiency, a diameter of 14 millimeters giving the best results. It is an advantage to slope the tube, whereby the downflow of liquid is retarded and better contact is obtained between the vapor and the condensed liquid. The efficiency of the distilling tube increases with the number of bulbs. A

further improvement on ordinary bulbs is obtained by heating the upper part and forcing the tube downwards, whereby a pear-shaped bulb results which is good for high temperatures. Young compared the forms of condenser known respectively as the Glensky and the Le Bel Henninger. In the former there are four bulbs each containing a glass ball, and the second bulb is connected by a side tube with the tube just below the lowest bulb. Looking upon the side tube as a reflux arrangement, the author considers the Glensky apparatus as hopelessly bad, as the condensed liquid can not gain access to it. This difficulty is obviated in the Le Bel Henninger apparatus, consisting of four pear-shaped bulbs provided with platinum cones instead of glass bulbs. Each bulb is connected with the next lower by a reflux tube attached to its base, thereby offering a free channel to the liquid. This apparatus has a moderate degree of efficiency.

[Pharm. Journ., 1899, p. 541.] *Oswald Schreiner.*

Graduated Receiver, after Raabe.—The receiver shown in the accompanying figure is very useful in the distillation of very volatile substances. Above the graduation of a measuring cylinder there is a side tube into which is fitted by means of a stopper the end of the condenser tube. At the top of the cylinder another tube, 40 to 50 cm. long, or, in the case of very volatile liquids, a condenser may be used. The apparatus is very serviceable in preventing evaporation of the distillate by currents of air. Made by Kaehler & Martini, Berlin.



[Ztsch. f. angew. Chem., 1899, Heft 16.] *O. S.*

Weighing Tube, after Raabe.—The weighing of acids and bases for titration by means of Lunge's stopcock pipette is somewhat troublesome. The balance is loaded more than necessary by the pipette, and moreover the latter does not lie very well on the pans. Much simpler are the weighing tubes as shown in the figure. They are made of thin tubing, are very light, and rest firmly on the balance pan. Made by Kaehler & Martini, Berlin.

[Ztschft. f. angew. Chem., 1899, Heft 16.] *O. S.*

Screw Stirrer.—The stirrer used by Meyerhoffer for determinations of solubility consists of a glass rod which has been widened at the lower end like a spatula and at the same time turned spirally. The upper part of the glass rod passes through a bored cork and through a piece of glass tubing which is fastened above the flask in a clamp. The stirrer is rotated by means of a turbine. Made by Kaehler & Martini, Berlin.

[Pharm. Centralh., 40, p. 343.] *O. S.*

A Simple Volumenometer. — C. E. Linebarger describes an apparatus for determining small volumes, which can be easily constructed out of material at hand in any laboratory. A wide-mouth two-ounce bottle is fitted with a rubber stopper perforated with two holes. Through one hole is passed a 10 cc. pipette, graduated to tenths of a cubic-centimeter and permitting of judging to one-hundreth of a cubic centimeter. A funnel tube with a short stem, bearing a mark just below the widened part, is passed through the second hole, the stem just being flush with the inner surface of the cork, so that the bottle may be completely filled with liquid without imprisoning any air bubbles. A long piece of rubber tubing is attached to the upper end of the stem and provided with a good pinch-cock. In use, the apparatus is filled with liquid to a little above the stopper, great care being taken to remove all air bubbles, and suction is then applied to the extremity of the rubber tube so as to bring the level of the liquid in the funnel stem to the mark, after which the pinch-cock is closed. The position of the liquid in the pipette is then determined to the $\frac{1}{100}$ cc. Next, place in the funnel a weighed amount of the solid under examination and gently blow the liquid up and down until all the solid is washed into the bottle. The liquid is then brought once more to the mark on the funnel stem and the new position of the meniscus in the pipette read off. It is, of course, advisable to make adjustments and read the levels several times, and take their average. Changes of temperature must be avoided during the work.

[Journ. Am. Chem. Soc., 21, p. 435.] *O. S.*

Chemistry.

A Simple and Reliable Method for the Estimation of Mercury in Urine. Schumacher and Jung find that when following the method of Jolles, wherein the mercury is thrown out by means of stannous chlorid and then amalgamated upon granular gold, the results obtained are below the truth. When, however, the urine after treatment with $SnCl_2$ is filtered through "gold-asbestos," no loss of mercury takes place. Gold-asbestos is made by saturating asbestos with a solution of gold chlorid, drying this and igniting in an atmosphere of hydrogen.

[Arch. exp. Phatol. u. Pharm., 42, p. 136; from Chem. Centrbl., 1, p. 1296.] *W. A. P.*

A Method for the Quantitative Separation of Isovaleric Acid from Acetic Acid. — While Duclaux has succeeded in estimating these two acids when occuring together by first determining the total acidity with $Ba(OH)_2$ and then the barium content of the salt so formed, no separation of the two acids has been attained. Alfred C. Chapman has now found that sodium isovalerate is readily soluble in a mixture of acetone 99.5 p. c. and water

0.5 p. c., while sodium acetate is insoluble in this mixture, and has based thereon a method of separation. The acids are exactly neutralized with NaOH, brought to dryness in a partial vacuum, the residue boiled with the acetone mixture under a return condenser for some minutes and filtered through a Gooch filter, the precipitate being washed twice with the same mixture, hot. The filtrate is evaporated, the dry residue converted to Na_2SO_4 and therefrom the amount of sodium valerate or valeric acid originally present. Similarly the sodium acetate on the filter is dissolved, converted to Na_2SO_4 and from the amount of sulphate the amount of sodium acetate or acetic acid calculated. The method gave good results when operating upon known solutions; usually a trifle too much valeric acid is found, due to the difficulty of washing the precipitate. [The Analyst, 14, p. 114.] *W. A. P.*

A Study of the Methods for the Estimation of Salicylic Acid.—Incidental to the determination of sodium salicylate in some medicinal preparations, W. Fresenius and L. Cruenhut submitted the several methods which have been proposed for the estimation of salicylic acid to a critical study.

Separation by immiscible solvents. From a solution of sodium salicylate acidulated with sulphuric acid all the salicylic acid could readily be abstracted with chloroform. This chloroformic solution could, however, not be brought to dryness without loss of acid, and this method can therefore only be depended upon for approximate results.

The iodometric method. This method depends upon the formation of iodine compounds of salicylic acid when an alkaline solution of the latter is tread with an excess of iodine solution and then rendered acid. From the amount of iodine rendered insoluble the salicylic acid is calculated. While Vortman (Anleitung zur chemischen Analyse organischer Stoffe, Wien, 1891, pp. 320 and 401) calculates one molecule of acid for every six atoms of iodine combined the authors demonstrate that the amount of iodine combined dedends largely upon the conditions of the experiment, thus in their work they find in sodium salicylate from 64.71 p. c. to 92.70 p. c. of acid while theory requires 86.23 p. c.

Titration with bromine solution. This method of Fr. Freyer, 1896 (Chemiker-Zeitung, 20, p. 820) is based upon the same principle as the estimation of phenol according to Koppeschaar practiced in the U. S. P. Excellent results were obtained when of the volumetric bromine solution (sodium bromate 3 gm., sodium bromide 20 gm., water 1000 cc.) 100 cc. were diluted with 300 cc. of water, to this 20 cc. of hydrochloric acid added, and to this mixture 20 cc. of an approximately 1 p. c. solution of substance under examination was gradually added. After standing for five minutes, occasionally stirring, 30 to 40 cc. of a 10 p. c. potassium iodide solution is added and the residual iodine titrated in the usual way.

[Zeitschft. f. anal. Chem., 38, p. 291.] *W. A. P.*

Cacao Butter.—J. Lewkowitch read a paper on the examination of cocoa butter before the Society of Chemical Industry, London Section, on June 5. Most of the points brought out are contained in the following table:

No	Melting-point	Solidifying Point of Fatty Acids	Saponification Value	Reichert-Meissel Value	Iodine Value
1	26.6–28	47.2–49.2	191.8–194.5	0.38–0.94	34.24–36.99
2	28.4	—	192.9	0.50	35.65
3	27	48–48.27	192	0.20	36.92
4	28.33	48.55–49.1	193.5	0.38	35.37
5	27.2–33	—	192.8	0.83	34.55

No. 1 gives the results of examination of commercial samples received in the ordinary way of business, No. 2 was made by the author, No. 3 was a genuine sample kept for ten years in a sealed bottle, No. 4 was genuine and fresh English cacao-butter, and No. 5 was Dutch ditto. The values obtained were those hitherto accepted but the Reichert-Meissel number, and the author suggested that this factor should be abandoned.

In the course of the paper the author discussed the question whether cacao-butter becomes rancid or not, and he showed by analytical figures that it does. He supposed that the idea that it does not become rancid was due to its use by pharmacists who find that relatively it does not become rancid quickly, which is the truth because the fat has the lowest iodine value of vegetable fats, and this value is a measure of the rapidity with which a fat becomes rancid; for the higher the value the more easy is rancidity. [Chemist & Drugg., 54, p. 919.] *W. A. P.*

Analysis of the Ash of Cardamoms.—W. Watson Will points out that it is one of the characteristic features of zingiberaceous plants that most of them take manganese from the soil, and he publishes the results of some analyses made by him on undoubted specimens of *Elettaria cardamomum:*

Seeds (whole).....3.26 per cent. of ash.
Seeds (crushed).....3.52 " "
Pericarp of fruit.....6.17 " "
Pericarp of fruit.....5.96 " "
Entire fruit and seeds (six taken in each case)..... 3.8 " " / 4.219 " "

The ash in all cases contained an appreciable quantity of manganese. There are several reports on the ash of cardamoms, some giving as much as 15 p. c.; but such an amount is thought to be far too high. There are so many varieties of cardamoms that it is just possible that there may be a wide variation in some species. [Pharm. Jour., 62, p. 403.] *E. K.*

Volumetric Determination of Ethyl Aldehyde.—Rocques reports on an improved method based on the one given by Rieter. The following reagents are required: 1. A solution S., which is prepared by dissolving 12.6 gr. of pure, dry sodium sulphite in 400 cc. of water, adding 100 cc. of normal sulphuric acid and diluting with 96 p. c. alcohol to 1000 cc. After standing for 24 hours the solution is filtered from the sodium sulphate which has crystallized out. 2. A $\frac{1}{10}$ normal iodine solution. 10 cc. of solution S. decolorize 20 cc. of iodine solution, 1 cc. of the latter corresponds to 0.0032 gr. of SO_2 and 0.0022 g. of ethyl aldehyde. For the purpose of determination 10 cc. of the alcoholic liquid to be investigated are allowed to run into a 100 cc. flask, 50 cc. of solution S. are then added and the liquid diluted with 50 p. c. alcohol to the mark. At the same time another solution is made in a similar flask of 50 cc. of solution S. and enough 50 p. c. alcohol to make 100 cc. Both flasks are allowed to stand at ordinary temperature until the following day. 50 cc. of each liquid are then titrated with the iodine solution, using starch paste as indicator. The difference between the number of cubic centimeters of iodine solution required in the two cases (A-a) 200×0.0022 gives the amount of aldehyde per liter. When the amount of aldehyde is very small, less than 1 p. c. but more than 0.5 p. c., the solution S. is best diluted with an equal volume of 50 p. c. alcohol and titrated with $\frac{1}{20}$ normal iodine solution; if only 0.1 p. c. of aldehyde be present the solution S. is diluted with 10 times its volume of 50 p. c. alcohol, and titrated with $\frac{1}{100}$ normal iodine solution.

[Compt. rendus, 127, p. 524.]

Rocques noticed that the temperature influenced the reaction in the above method to a considerable extent. Instead of allowing the two flasks mentioned above to stand for a day at ordinary temperature he recommends to heat the tightly stoppered flasks for 4 hours to 50° in a water bath.

[Compt. rendus, 127, p. 764.] *O. S.*

Detection and Determination of Acetone with Mercuric Sulphate.—G. Denigès makes use of the precipitates given by treating the ketones of the fatty acid series with excess of mercuric sulphate for detecting and quantitatively estimating acetone. These precipitates when dried at 100° have the formula $[(SO_4Hg)_2 . 3\,HgO]_3\,4\,COR_2$. The facility with which the reaction takes place, the theoretical yield and the high molecular weight (17 times greater than acetone) allow of the quantitative determination of even small quantities of acetone. Aqueous solutions must not contain more than 1 p. c. and methyl alcoholic solutions not more than 2 p. c. of acetone.

For the detection of acetone in aqueous solution, 2 cc. are mixed with an equal volume of the mercury reagent which is prepared by dissolving 5 gr. of HgO in a mixture of 20 cc. of sulphuric acid and 100 cc. of water

on a boiling water-bath. If no precipitate or turbidity shows itself after 10 minutes boiling of the solution, acetone is not present. The reaction does not show in less than 45 seconds. This test allows of the detection of 0.02 gr. of acetone in 1 liter of water. If the acetone is in methyl alcoholic solution the proceeding is the same except that the 2 cc. of the solution are first mixed with 2 cc. of water, and then treated with 4 cc. of the mercury reagent, as hot concentrated methyl alcohol precipitates the mercuric sulphate. Ethyl alcoholic solutions must be diluted so that no more than 2 p. c. of alcohol be present, because on heating the alcohol produces reduction and separation of mercurous sulphate.

For a quantitative determination of the acetone, 25 cc. of the solution and 25 cc. of the mercury reagent are mixed in a 100 cc. flask. The amount of acetone in the sample must not exceed 50 mgr. and in methyl alcoholic solution the percent of alcohol must be reduced by dilution with water so as not to exceed 10 p. c., and with ethyl alcohol so as not to exceed 1 p. c. The flask is then well corked and set on a water bath, which is then heated to boiling and kept so for 10 minutes. After cooling, the precipitate is collected on a tared filter, washed with cold water and dried. By multiplying the weight of this precipitate by 0.06 (the theoretical coefficient is 0.0584), the weight of the acetone contained in the 25 cc. is obtained.

The determination may be made volumetrically in much less time as follows: The mixture of the solution and the mercury reagent are diluted to 100 cc., 20 cc. of this are treated with 15 cc. of ammonia (1:5) 50—60 cc. of water, 10 cc. KCN solution, which is equivalent to an ammoniated $\frac{1}{10}$ normal $AgNO_3$ solution, and with the addition of KI the solution is titrated with the last named silver solution until a permanent turbidity is produced. If — be the number of cc. of silver solution required and x the amount of acetone in a liter of the solution of which 25 cc. were used for the experiment, then x may be expressed as follows:

$$x = (- - 0{,}4) \times 0.3 \text{ gr.}$$

[Compt. rendus, 127, p. 963.] *O. S.*

Colloidal Bismuth.—According to L. Vanino, if 2 gr. of bismuth tartrate, which has been brought into solution by the help of a little tartaric acid and caustic alkali, be treated with so much water that the solution is about 600 gr. and to this a solution of 1.5 gr. of stannous chloride in caustic potash be added, a clear, brown solution results which deposits but traces of bismuth, and behaves toward the electric current like colloidal gold solution, namely, it deposits bismuth on the electro-positive pole, and can be readily salted out. The bismuth which is thus obtained by salting out is only partially soluble in water, from which it follows that the colloidal bismuth shows a great tendency to revert to the ordinary form. It is poisonous and for the present is only of theoretical interest.

[Pharm. Centralh., 1899, No. 18.] *O. S.*

New Indicator. — E Riegler recommends a new indicator for the titration of acids and bases. If an alkaline solution of guajacol be treated with a solution of diazoparanitraniline there results a brown diazo-dye of the composition $NO_2C_6H_4N:NC_6H_3(OCH_3)OH$, which is insoluble in water, but soluble in alcohol. 0.20 gr. dissolved in 100 cc. of alcohol gives an indicator which is more delicate than phenolphthalein. One or two drops color an alkaline solution nicely red; a slight excess of acid changes the color to greenish-yellow. [Chem. Ztg. Repert. 23, p. 93.] *O. S.*

Botany and Pharmacognosy.

Calliandra grandiflora. — This shrub, known as Tlacoxilochitl, Pambotano, Lele, Timbrillo, Tepachera, Cabellitos, and Xilonochitl, is indigenous to Mexico and Brazil. The root has had a local reputation as an antiperiodic, but recent investigation does not support this view. The active principle is, according to Altamirano, a glucoside, caliandrin, which appears to be a saponin. Duyk finds that it is toxic in large doses, and also in much smaller quantities when administered by hypodermic injection. Internally it acts as an irritant and emetic. The root is used in the fermentation of tepache, but the part it plays in the process is not evident.

[Pharm. Journ. 62, p. 325; from Bull. Comm. 27, p. 81; from Bull. de la Soc. de Pharm. de Brux.] *L. S. Cheney.*

Anhalonium Lewinii. — Fresh contributions to the knowledge of the physiological properties of this most interesting drug, which was first placed upon the European market by Merck two years ago, have been furnished by Havelock Ellis (Lancet, 1897, No. 3849, p. 1540) and A. Heffter (Arch. für exper. Pathol. and Pharmakol., 1898, 40, p. 383). According to the statements of these investigators, who chiefly experimented upon their own person, the drug and the alkaloids extracted from it (comp. properties of anhalonine) possess identical properties. The principal symptoms of mescal poisoning, in particular the singular visions to which it gives rise, are exclusively ascribable to the alkaloid mezcaline. Probably the peculiar mescal phenomena are due to the action of the drug upon the nervous central organ, although it is not impossible that it may excite the peripheral organs of vision. So far, it has however not been possible to fix any general limitation of the field of view or of the perception of colour. Weir Mitchell (Merck's Report 1896) and Ellis feel justified in assuming that the drug may gain favor with civilized people as an intoxicant, but Heffter does not consider this to be probable since the secondary properties seriously interfere with the pleasantness of the visional hallucinations. There can however be no doubt that it would be a thankful task for physiologists and experimental psychologists to minutely study the action of the drug.

[Merck's Report for the year 1898, p. 156.] *L. S. C.*

Cortex Johimbéhé.—In accordance with the expectations raised in Merck's Report 1897, p. 155 Oberwarth has reported on the pharmacological examination of johimbine, the active principle of the Johimbéhé bark in Virchow's Archiv für pathologische Anatomie, Physiol. und klin. Medicin 1898, 153, p. 232. The experiments of this author showed that johimbine paralyses first respiration and subsequently the heart. Doses of 0.01—0.08 grm. (grs. ⅙—1⅓) caused in a dog great restlessness and excitation and gave rise to erections but it did not effect in any way other organs. A higher dose 0.15 grm. (grs. 2½) caused an acute attack of convulsions and temporary paralysis, especially of the hind legs. After the expiration of 14 days the animal exhibited nervous disturbances which assumed the form of violent trembling, weakness and timidity, there were however no changes in the action of the heart. It seems accordingly that the johambéhé bark is justly valued in its home, the Cameroons, as an aphrodisiac.

[Merck's Report for the year 1898, p. 157.] *L. S .C.*

Flores Spartii scoparii.—From *Spartium scoparium* (*Sarothamnus scoparius*) a European Papilionacea. Popular name: broom. Formerly the leaves, the branches and the seeds of broom were officinal diuretics and emeto-cathartics and known as *Herbae, Flores et Semina Spartii seu Genistae scopariae*, but they were gradually supplanted by sparteine, the active principle of the drug. Testevin (Nouveau remèdes 1898, No. 19, p. 454) recommends a decoction of spartium flowers (100.0—150.0, [oz. 3½—5] per 1000.0 cc. [f. oz. 33] of water) containing 5% of salicylic acid for the treatment of erysipelas in the place of the alkaloid, the useful properties of which in erysipelas had previously been emphasized by Geley, Guinard, Mollière and Vinay (see Report 1896, p. 142). Compresses are saturated with the decoction and applied to the areas affected with erysipelas and the whole is covered with guttapercha paper. In severe cases the dressing is repeated twice daily. The compresses act antiseptically and, owing to the sparteine contained in the spartium flowers, produce also anaesthesia, which has a beneficient effect upon the patients. The treatment possesses the further advantage of being inexpensive and easily applicable.

[Merck's Report for the year 1898, p. 157.] *L. S. C.*

Folia et Semina Leucaenae glaucae.—The leaves and seeds of *Leucaena glauca* Benth., of the family of *Mimoseae*, growing in South and Central America, particularly in Jamaica and the Bahama Islands. Popular name: Jumbai. We owe our first knowledge of the peculiar physiological properties of this drug to the English botanist D. Morris (Journ. of Comp. Med. and Veterinary Archiv, 1897, Nov.). He observed that Leucaena produces violent falling off of the hair in all non-ruminants eating its leaves, pods and seeds. Horses, mules and asses lose thereby the hairs of their manes and tails, pigs lose the whole of their hair. If horses rendered bald

by the consumption of leucaena are subsequently fed exclusively on corn and hay, the hairs are seen to grow afresh, but they are more delicate and frequently of a different colour from that of the original hairs and the animals never regain their previous appearance. Cases have been rerorded of animals having lost their hoofs. In the case of ruminants leucaena does not produce depilatory effects. Nothing is known as yet with regard to the active principle to which this depilatory action is due and the process by which it is destroyed during its passage through the stomach of ruminants. The leucaena plant brings us accordingly face to face with the same mysterious subject as the thallium salts.

Dr. Morris has kindly sent Mr. Merck a small quantity of leucaena seeds, which he has partly employed for the purpose of propagation, and he hopes shortly to possess sufficient material to carry out a series of experiments with this peculiar plant.

[Merck's Report for the year 1898, p. 158.] *L. S. C.*

Herba Adonidis aestivalis. — From *Adonis aestivalis*, a Ranunculacea growing in Europe. Several years ago R. Kessler (Merck's Report 1894, p. 99) drew attention to the great value of the alcoholic tincture of *Adonis aestivalis* for anti-fat treatment. The advantageous properties of the tincture are according to Winogradow (Wratsch, 1898, No. 16) shared by the aqueous infusion of the herb of *Adonis aestivalis*. The maximum reduction of the body weight effected by this infusion after 5 months of treatment amounted to 42 lbs., whilst the minimum result obtained during a period of 2 months was 4—7 lbs. The loss of weight was accompanied by an improvement of the whole of the symptoms caused by obesity, such as asthma, giddiness etc. The puls and cardiac sounds improved perceptibly, but there was no change in the diuresis. Secondary symptoms such as nausea, palpitation of the heart, fainting fits etc. were not observable in a single instance. No special diet was prescribed. The preparation should be administered according to the following formula:

Rp.: Infusum herbarum
Adonidis aestivalis (4.0—8.0 : 150.0) [drs. 1—2 : f. oz 5]
Syrupi corticis aurant. 30.0 [f. oz 1]
3—5 table spoonfuls to be taken per 24 hours.

[Merck's Report for the year 1898, p. 159]. *L. S. C.*

Practical Pharmacy.

Tincture of Fat-free Digitalis. — J. W. England prepares the above named tincture by exhausting the freshly ground leaves (No. 60 powder of fatty matter) with purified benzin, and then drying the residue spontaneously, preferably in sunlight and open air. The leaves treated in this manner are then exhausted according to the process for preparing the official tincture.

When 980 cc. of percolate are obtained, the receiver is removed and 10 p. c. ammonia water added (10—15 cc.) to neutralize the acid reaction. The tincture is then finished to 1000 cc. by adding the necessary amount of diluted alcohol. The object of these modifications is that the benzin removes the fat and nauseating principles and that the ammonia water forms ammonium salts with the acids present, rendering them more soluble and therefore more easily assimilated. The tincture prepared in this manner has a reddish-brown color, agreeable odor, pure bitter taste and is very stable. A large list of data regarding the therapeutic action of the two tinctures concludes the paper. [Am. Jour. Pharm., 71, p. 332.] *W. O. Richtmann.*

On Acetic Acid as a Substitute for Ethyl Alcohol in Extracting the Active Principles of Some Official Drugs.—A second paper by Edward R. Squibb on the extraction of drugs by means of 10 p. c. acetic acid gives the results of several experiments made on cinchona bark.* The experiments are given in the minute detail with complete data. The conclusion the author arises at is "that it (fluid extract of cinchona prepared by means of 10 p. c. acetic acid) is a better therapeutic agent and a more eligible preparation than the official fluid extract and at a far lower cost."

A very simple extractor is shown for the percolation of cinchona for assay purposes. A process for the assay of cinchona follows, which is a modified process of the U. S. P., but the manipulation of which is more difficult than the latter. Results obtained by the modified process are undoubtedly the more accurate, since more separations are made; and further a volumetric determination is made as a check upon the gravimetric estimation.

[Am. Jour. Pharm., 71, p. 305.] *W. O. R.*

On the Transformation of Calomel into Corrosive Sublimate.—G. C. Diekman reports that contrary to the general opinion calomel in the presence of soluble chlorides or organic acids is not oxydized to corrosive sublimate in quantities sufficient to produce decided poisonous and fatal effects. Tests were made with calomel, which had been previously found free from corrosive sublimate, both by trituration and suspension with soluble chlorides. Corrosive sublimate was found after 24 hours (but in all cases less than 0.0006 p. c.) in all trials with aqueous solution of the soluble chlorides or organic acids; and in those where trituration was long continued (30 minutes) and absent where the trituration was brief (2—3 minutes). Where poisonous symptoms have appeared after the administration of calomel mixtures similar to those above, the symptoms have been duplicated by the administration of calomel alone, showing the presence of corrosive sublimate originally in the calomel. [Pharm. Era, 22, p. 7.] *W. O. R.*

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* The first paper discussed nux vomica preparations in the same manner. See Am. Jour. Pharm. 71, p. 1.

Assay of Some Samples of Fowler's Solution.—Twelve commercial samples of solution of potassium arsenite were assayed by G. A. Ferguson and R. J. Nestell and reported upon before the recent meeting of the New York State Pharmaceutical Association. No sample contained the required amount of arsenous acid (1 gm.—100 cc.). One sample had an excess and all the remaining samples were deficient. Three samples were examined for arsenate and all were found to contain arsenic in this condition as well as the arsenite. [Pharm. Era, 22, p. 4.] *W. O. R.*

Report of Committee on Adulterations and Sophistications, Massachusetts State Pharmaceutical Associations.—A very extended list (5 pages) of adulterations of various drugs obtained from various sources in Massachusetts is given. Some of the articles and their shortcomings are as follows:

Solution of subacetate of lead—but 1 out of 21 examined samples was of the required strength (25 p. c.).

Quinine sulphate—50 p. c. of the samples contained "alkaloids other than quinine" in excess of the U. S. P. limit.

Soluble iron and quinine citrate—75 p. c. were deficient in the amount of quinine.

Solution of and tincture of ferric chloride—both showed varying deficiencies in the amount of iron present. Ferrous iron and nitric acid were found in several samples.

The result of this investigation and other similar ones emphasize very strongly the necessity for further uniformity in all lines of pharmaceutical preparations. [New Eng. Drug., 11, p. 439.] *W. O. R.*

New Remedies.

Phenegol. — The mercuro-potassium salt of nitro-para-phenol-sulfonic acid, which forms a reddish-brown, inodorous, tasteless powder, soluble in water, contains about 33 percent of mercury. It is recommended as an almost non-toxic, neutral antiseptic. According to the phenol employed the title varies as for example; Cresegol, Phenegol, Thymegol etc. The nitrated para-phenol-sulfonic acids being known as "Egols".

(Phar. Centh. 40, p. 315.] *V. C.*

Astra. — A new baby food containing 12.7 percent of albumin, which is intended as a substitute for cows milk.

[Phar. Centh. 40, p. 319.] *V. C.*

Kalk-Caseïn. — Calcium-phosphate-Caseïn, a bone forming food.

[Phar. Centh. 40, p. 319.] *V. C.*

Recent New Remedies. — "As in our former reports, we begin the present paper with the advances made in the last few months in pharmaco-therapeutics and a brief review of the novelties in the drug market. We have

repeatedly established the fact that the high tide of new remedies has about passed, and the new things offered do not by far receive the same interest and acceptance which they could positively calculate upon only a few years ago. This is chiefly because we now possess in every group of remedies with a specific effect one or more representatives which have found lasting favor among practitioners, are obtainable at low prices, effecting everything than can be reasonably expected of a drug. A new remedy, therefore, must combine several special advantages in order to find a permanent place in materia medica. Whether this is the case with valerydin, briefly mentioned in our report for December and recently recommended by several authors, may remain an open question. Valerydin is the condensation product of valerianic acid and para-phenetidin, $(CH_3)_2CH—CH_2.CO.NH.C_6H_4.OC_2H_5$; it forms white crystals insoluble in water, and melting at 129° C. The claim is made for the preparation that it combines the antipyretic effect of phenacetin (which, as is well known, is the condensation product of acetic acid with para-phenetidin) with the antispasmodic action of valerianic acid and, contrary to all other salts of valerianic acid used therapeutically, is free from the unpleasant and annoying odor of the latter, which is certainly an advantage.

The group of wound antiseptics has been enriched with an apparently very serviceable preparation, placed on the market by the firm of Hoffmann-La Roche & Co., of Basel (Switzerland), namely, asterol, an ammonium tartrate of parasulphophenol and mercury, having the composition $C_{12}H_{10}O_8S_2Hg.4C_4H_4O_6(NH_4)_2+8H_2O$. The preparation of this new antiseptic is based upon the observation that parasulphocarbolate of mercury (hydrargyrum parasulphophenylicum [hydrargol]), which is but slightly available as an antiseptic on account of being to readily decomposed (even by water), dissolves in a solution of tartrate of ammonium, with the formation of the above-named double salt that contains fifteen per cent. of oxide of mercury. Asterol, a reddish-white powder, soluble in water, in comparison with sublimate (bichloride of mercury) and the numerous mercurial preparations proposed as substitutes for the latter, has the notable advantage, as proved by F. Steinmann and others, that it does not precipitate albumen, and consequently manifests its effect more in the depth of the wound, while it does not attack surgical instruments. Steinmann recommends asterol in solutions of 0.2 to 0.4 per cent. strength. Should asterol come up to the expectations now entertained in regard to it, we shall have occasion to revert to it in one of our subsequent reports.

In our report of last December we made mention of an interesting novelty, although its therapeutic utility was still somewhat questionable—namely, hyrgol, a colloidal, or water-soluble, metallic mercury. The preparation of this water-soluble mercury, which is to be employed mainly in the form of unguentum hyrgoli, and is said to penetrate very rapidly

through the skin, is a matter of general interest, and therefore the most essential points with reference thereto may be cited from the letters-patent now before us. A gram molecule of mercuric nitrate is dissolved to the amount of about ten per cent. by the addition of the least possible quantity of nitric acid, and the solution is poured slowly, under constant stirring, into a solution of from one to one and a-half gram molecule of oxide of tin in nitric acid. The resulting dark liquid is diluted with a concentrated solution of citrate of ammonia, when the colloidal mercury is precipitated in the form of a black magma. The liquid is neutralized with ammonia and decanted after the complete precipitation of the magma, which is then dried. However, we should not hide the fact that S. Falk, according to a communication in the Deutsche medicinische Wochenschrift, did not obtain particularly favorable results with the preparation in the treatment of syphilis; moreover, the solutions of hyrgol are not stable, thus rendering the dosage difficult; in the dry preparations metallic globules form gradually and are of course insoluble, and finally the effect is said not to be especially energetic, whether the preparation is used by friction or by injection.

As stated in our report for September, 1898, of the silver preparations used for antiseptic purposes, argonin, i. e., a casein-silver obtained by precipitating a solution of sodium-casein with silver nitrate—has found more extensive application. This preparation has the drawbacks that it dissolves in water only when heated, thus being liable to be decomposed, and the solutions likewise are very apt to undergo changes. These drawbacks have been overcome in a more recent product, "soluble" argonin or argonin L., which forms a light yellow powder, dissolves easily in cold water, and remains unchanged for months in its solution. It does not coagulate albumen. This argonin L. is also richer in silver, containing ten per cent., while the argonin hitherto used contains but 4.2 per cent. J. Jell has had good results with solutions of one per cent. strength, which do not cause the least pain.

The group of iodoform substitutes, already quite large, has been enriched, as stated in our report for September, by Knoll's iodoformogen, which is a combination of iodoform and albumen, containing about ten per cent. of the former. In this preparation therapeutics seems to have obtained a valuable addition; at least, Heddaeus (Münchener medicinische Wochenschrift) claims that it possesses the specific properties of iodoform, is almost entirely odorless, and has the special advantage that it may be used in combination with moist dressings.

Another iodine derivative, though intended for internal use, is iodipin, a combination of iodine and oil of sesame or almond, which in its external appearance and taste does not differ from the oil employed in its prepara-

tion and retains the iodine with great tenacity, for the latter does not separate even when the preparation is kept for months. According to Winternitz, iodipin is in part decomposed in the body, but in part it is deposited unchanged for a greater or less period of time in the fatty tissue of different organs. Frese calls the preparation a perfectly proper substitute for the alkaline iodides, over which it has several advantages, in that it does not injure the stomach, produces no symptoms of poisoning, and has a favorable after-effect for a longer time than iodide of potassium.

In our last report we mentioned, among the hypnotics, heroin (a di-acetic-acid ester of morphine). Some progress has been made with this preparation, owing mainly to the fact that the manufacturers now supply a hydrochlorate of heroin, which is a white crystalline powder, soluble in water in the proportion of 1:2, and perfectly neutral in reaction; these properties permit of the use of heroin for subcutaneous injection. Heroin is given in bronchitis, pharyngitis, laryngitis, the pulmonary catarrh of phthisis, and bronchial asthma. Eulenburg, Turnauer, and Leu (Deutsche medicinische Wochenschrift and Wiener medizinische Presse) speak very favorably of the drug; according to the first-named author, the narcotic effect from subcutaneous injection is as good as that of somewhat larger doses of morphine. It is best to give a two-per cent. solution of the hydrochlorate in single doses of from 0.25 to 0.5 cc. Larger hypodermics, such as 0.01 gm. as a dose and 0.03 per diem, should not be given, according to Eulenburg. At all events, heroin hydrochlorate is the morphine derivative which is most soluble in water; heretofore dionin (hydrochlorate of morphine-ethyl-ether) was regarded as the most soluble, being 1:9. The future will decide whether either of the two most recent morphine derivatives, heroin and dionin, will succeed in gaining a permanent place in materia medica." [Notes on New Remedies, 10, p. 43.] *E. K.*

Physiology and Pharmacology.

Organo-therapeutic Preparations.*—Organic medication occupies again an important portion in the medical literature of the past year. The material adduced in its favor has gradually become so extensive that the reserve with which its doctrines were received has given way to a general recognition of their substantiality. Although it must be admitted that many a clinical test has failed to satisfy expectations, yet it remains for the future as a scientifically established fact that the specific function of a pathologically changed or entirely suppressed human gland is capable of restitution by the introduction of the corresponding glandular substance of animals.

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* For earlier reports see vol. 16, p. 275; and vol. 15, p. 144 of this journal.

A complete review of the present position of the organic treatment is furnished by the transactions of the French Congress of Internal Medicine held at Montpellier from the 12th to 14th April 1898, in which de Cerenville, A. Gilbert, P. Carnot and A. Mossé acted as referees (Presse médicale 1898, No. 35, p. 209, and No. 36, p. 220), also by the Reports laid by Rummo and Bozzolo before the 9th Italian Congress of Internal Medicine held at Turin. We have also, through the meritorious labors of C. Posner (Berl. klin. Wochenschr. 1898, No. 11, p. 241), obtained clearer ideas of the composition of certain mixtures of albuminoids, difficult to analyse, which have been placed upon the market under the title of organo-therapeutic preparations. This investigator employed for the differentiation of the various glandular substances Ehrlich-Biondi's triple stain and by its means fixed the nucleinic and nucleo-albuminic properties of the majority of the organo-therapeutic substances.

Cerebrum.—Nothing new is to be recorded from last year's clinical applications of dried brain substance. On the other hand A. Wassermann and Takaki (Berl. klin. Wochenschr. 1898, No. 1, pp. 4 and 5) have made the apparently very interesting discovery that it is possible to produce artificial immunity against tetanus by means of fresh brain substance. Wassermann has shown that 1 cc. (m. 16) of an emulsion of brain containing about ⅓ cc. of the brain substance of various animal species suffices to completely neutralize the effects of a tenfold lethal dose of tetanus poison. Krokiewicz (Semaine médicale 1898, No. 45, p. CLXXVIII) has put this discovery to the test practically on a tetanus patient, whom he succeeded in saving by repeated injections of an emulsion of 5.0 grm. (grs. 80) of fresh brain substance in 15 cc. (f. oz. ½) of physiological salt solution. V. Babes (Semaine médicale 1898, No. 29, p. 147) ascribes a certain degree of healing power to injections of brain substance in the treatment of lissa.

In addition to these interesting experiments the remarkable fact discovered by Widal and Nobécourt (Hygien. Rundschau 1898, p. 511) should be recorded that with the aid of brain substance it is possible to render strychnine and morphine inocuous. This phenomenon is not, however, based upon any specific property of the brain substance, as it is in the case of the neutralization of tetanus poison, but is to be ascribed to a purely mechanical occlusion since Thoinot and Brouardel (Semaine médicale 1898, p. 141) have shown that the same effect can be achieved through the instrumentality of other finely divided substances, such as talcum, coal-dust, etc., which should be taken into consideration when giving internally strychnine and morphine.

Glandulae Prostatae sicc. pulv.—The hesitative attitude hitherto observed with regard to the prostata treatment does not appear to be justified according to the communications of Oraisons (Presse médicale 1898, No. 36, p. 222). This writer has treated 7 prostatic patients who had all reached

the stage of retention. In 5 cases there was a marked success, in one case there was only a slight improvement, whereas only in one case the treatment remained fruitless. Favorable results are also recorded by Arnozan (loc. cit.) who treated hypertrophy of the prastate in this way. This method does not therefore seem to be by any means so devoid of prospects as is generally assumed.

Glandulae Suprarenales sicc. pulv.—The study of the suprarenal capsules possesses permanent attractions for investigation in medicine. As yet, the attempts to isolate and accurately define the physiologically active elements of this organ have been rewarded with little success. According to the investigations of Swale Vincent (Birmingham Med. Rev., Vol. 43, No. 236) the suprarenal capsule consists of two distinctly different glandular organs, the cortex and the medulla. W. Myers (Klin. therap. Wochenschr. 1898, No. 18, p. 708) ascribes to the cortical substance the power of neutralizing snakepoison. The medulla contains a chromogen which is allied to the tannins and a body which possesses some affinity to piperidine, without, however, being in any sense identical with it, as shown by the investigations of Moore (Journ. of Physiology 1897, Vol. 21, Nos. 4 and 5) and Velich (Wien. klin. Rundschau 1898, Nos. 33—36).

It is still a question whether the suprarenal capsule is therapeutically active in the treatment of Addison's disease. Béclère treated this disease by its means and effected recovery, which has continued uninterrupted for the last three years, and believes that the rationale of the treatment is based upon the favored compensatory hypertrophy of those parts of the suprarenal parenchyma which had not yet been seized by the disease. The results of M. Pickardt's observations (Berl. klin. Wochenschr. 1898, No. 33, p. 727) are however totally negative as far as they concern the efficacy of the suprarenal bodies in Addison's disease. A further application of the suprarenal substance has been indicated by Solis-Cohen (Phil. Med. Journ. 1898, 13th Aug.) The latter states that its power of increasing the blood pressure and of obviating congestion asserts itself particularly in hayfever, inasmuch as doses of 5 tablets per day of 0.3 gr. (grs. 5) each of the dried gland suffice to completely counteract the distressing symptoms of cold in the head.

Extractum Suprarenale Haemostaticum.—Physiologically our knowledge of the properties of this preparation has been enriched by a A. Velich (Wien. med. Wochenschr. 1898, No. 26), Langlois and Camus (Presse médicale 1898, No. 40), Radziewski (Clinique ophthalm. 1898, No. 4), Corona and Moroni (Riforma med. 1898, p. 459), Badano (Münch. med. Wochenschr. 1897, No. 15, p. 1757), Spina (Wien. klin. Wochenschr. 1897, No. 48 and Wien. med. Blätter 1898, Nos. 16 and 17) and E. v. Cyon (Arch. f. d. ges. Physiol. 1898, Vol. 72). The most remarkable result of these investigations is probably the discovery that the suprarenal extract possesses a powerfully stimulating

effect upon the sympathetic nervous system of the heart and the vessels (accelerators and vasco-constrictors), whereas it has a paralysing action upon the regulator nerves of these organs, as well as upon the vagus and depressor, whence it follows that this extract is a powerful antagonist of iodothyrine and hypophysine (Cyon). The observations of Cyon were contradicted by Fenyvessi (Orvosi hètilap 1898, 10. Dez.), who found that during the increase of the blood pressure the vagus is not paralyzed but stimulated, and he regards the paralization of the vagus as an intoxication symptom proceeding from a central origin. Sargnon (Lyon médical 1898, 2. Oct.) regards the application of the suprarenal extract as rhino-laryngologically and ophthalmiatrically important in those cases where cocaine loses its anaesthetic properties in consequence of of hyperaemia of the tissues. Special indications for its application in ophthalmic surgery are also instanced by Königstein (Wien. med. Blätter 1898, No. 8) and Hallot (Rev. intern. de Méd. et Chirurg 1898, p. 179) in *corneitis vascularis parenchymatosa*, functional hyperaemia of the conjunctiva in overstrained eyes, spring catarrh, the preparation being, in fact, adapted for counteracting hyperaemiae and swellings in general. Subcutaneous injection of 1 p. c. aqueous solutions of the suprarenal extract is recommended by C. Forlanini (Brit. med. Journal 1898, II, p. 1176) in acute cardio-vascular pareses of infectious diseases, in particular of typhoid, where all other angio-cardio-kinectic remedies are known to fail. In these cases 7—9 cc. (f. drs. 1½—2) per dose are injected 2 to 3 times daily. In typhoid higher doses of 20 cc. (f. drs. 5½) per day may be resorted to, but even in this case it is left to the discretion of the physician to adapt the dose to the exigencies of the case. Bates (Semaine médicale 1898, No. 3, Annexes p. X) invariably employs for oyhthalmological purposes freshly prepared aqueous solutions containing 0.6 grm. (grs. 10) of extract per 2 cc. (m. 32).

Glandula Thyreoidea siccata pulv.—The physiological significance of the thyroid gland and the iodine substance contained therein is still a much debated question. F. Blum (Zeitschr. für physiol. Chemie 1898, Vol. 24, p. 160) defeats the view that iodothyrin is not a substance originally formed in the thyroid gland, but an intentional product of dissociation, also that the iodine substance proper of this gland belongs to the iodoproteids and that the thyroid gland acts as an antidote for poison, performing the function of intercepting toxic substances in the circulation and rendering them inocuous. Roos (Zeitschr. für physiol. Chemie 1898, Vol. 25, Nos. 1 to 4), on the other hand, arrives at conclusions which are almost diametrically opposed to those of Blum. As far as can be judged from the literature existing at present, Blum's theory of the anti-poisonous function of the thyroid gland has received the greatest number of adherents, although it cannot very well be doubted that this organ performs, in accordance with the views of E. de Cyon

(Arch. de Physiol. 1898, No. 3) a purely mechanical action and that it is one of its functions to protect the brain from the danger of becoming suddenly engorged with blood, be it by an increased action of the heart, or be it by congestion of the circulation. Fresh light has been thrown on the chemistry of the iodine of the thyroid gland by A. Tambach (Zeitschr. für physiol. Chemie 1898, Vol. 34, p. 549), who arrives at the conclusion that the therapeutical action of the gland is very probably not based upon the dissociation and subsequent absorption of thyriodine, but rather upon the absorption of certain iodized products of digestion of the gland. Of all thyroid preparations which are now supplied commercially the dried glands represent still the most efficient form of medication. Nevertheless a new thyroid preparation, called "thyroglandine," has been added to the list and is said to possess the entire active properties of the gland without its disadvantages. (See E. C. Stanford, Pharm. Journ. 1898, No. 1468, p. 167, and M. Mc. Lennan, Brit. Med. Journ. 1898, II, p. 79.)

New indications for the thyroid treatment have been discovered by W. Bishop and F. Page (Phil. Med. Journ., vol. 1, p. 1069) in carcinoma, by Ph. Mongour (Presse médicale 1898, No. 78, p. 172) in Corre's lethargy. Precise notes on the application of the thyroid tablets, as prepared by Merck, in the treatment of obesity are furnished by Prof. M. Affanasieff in No. 6 of the Klinisch-therapeutische Wochenschrift 1898. According to this paper Merck's thyriodine is administered to otherwise healthy and robust though corpulent persons in initial doses of 0.2 grm. (grs. 3½) increasing these gradually to 0.5 grm. (grs. 8) given 2 or 3 times daily. The preparation is best given in the form of tablets, which should be taken after meals and followed by a little water. This treatment should be continued for weeks and months and interrupted for a time, especially if there should be any symptoms of thyriodism. The result of the treatment may be regarded as satisfactory if the loss of weight produced by it amounts to 100 to 200 grms. (oz. 3½—7) per day.

According to A. Rivière (Sem. médicale 1898, No. 24, p. 94) sexual impotence also ranges among the accessory effects of thyriodin and this author believes therefore that this antiphrodistic property of the thyroid might be utilized to counteract congestion of the urinary and sexual organs affected by prostatitis. Rédard and Mabille (Münch. med. Wochenschr. 1898, No. 25, p. 806), prescribe arsenic in the form of Fowler's solution as an antidote against the symptoms of thyriodism. It is therefore advisable to administer thyroid and arsenic concurrently.

Hypophysis Cerebri sicc. pulv.—The pituitary gland has in the course of the past year been almost exclusively the subject of physiological investigations, but there are no fresh therapeutical notes with the exception of a paper by E. de Cyon (Bull. de l'Acad. de Méd., 22. Nov. 1898). According to E.

Cyon (Arch. f. d. ges. Physiol., vol. 70, p. 292; vol. 71, p. 431; vol. 73, p. 339) and Ch. Liven (Deutsche med. Wochenschr. 1898, No. 39, Ver.-Beil. No. 26, p. 191) the effects of the action of the hypophysis extracts manifest themselves principally by a considerable increase of the intensity of the beats of the heart coupled with a decline of their frequency, and an increase of the blood pressure. Howell (Journ. of exper. Med. 1898, p. 245) believes that these effects are mainly produced by the infundibulary part of the gland, whereas the anterior lobe is physiologically almost insignificant. Hypophysis and thyroid have an analogous action upon the regulatory cardiac system and the vascular nervous system. But, as is shown further on by E. de Cyon, the pituitary gland performs both a chemical and a mechanical duty. Its chemical action consists in the increased susceptibility of the regulator nerves of the heart and of the vessels. It is only with respect to this chemical function that the pituitary gland may act as a partial substitute for the thyroid. The mechanical function of the pituitary gland is based upon the fact that this organ is affected by the slightest changes of pressure in the cranial cavity, so as to instantly set in motion the protective apparatus adapted to counterbalance the disturbances caused by these changes of pressure. In this purely mechanical function the thyroid gland is subordinate to the pituitary gland. Administered internally, the hypophysis preparations restore to the diseased organ to a certain extent its chemical functional powers, but the mechanical part is thereby not affected in the least, from which it follows that the organic treatment of this disorder is but limited in its results.

Lien sicc. pulv.—The substance of the spleen, having so far only been applied to the treatment of malarial cachexia, Basedew's disease, chlorosis and anæmia has recently been recommended for the treatment of psychosis by A. C. Clark (Edinburgh Medical Journal 1898, No. 2). Clark was led to this form of treatment by the observation that mental diseases were often accompanied by a marked diminution of the size of the spleen. The successes of this treatment have partly justified his theories. In the case of constitutionally weak patients suffering from mental disorders the treatment produced a favorable action both as regards the condition of the body and the psychical trouble, as manifested by the improvement of the general condition and the disappearance or interruption of the state of stupor. In few cases did it give rise to conditions of excitation. The observations of Clark have been confirmed by Ch. A. Bois and N. T. Kerr (Brit. Med. Journ. 1898, No. 1959, p. 684). The experiments of these investigators have also shown that after using the spleenic extract for some time the thyroid treatment had a greater effect upon psychosis. Ascoli (Sem. méd. 1898, No. 51, p. 415) treated a female patient, upon whom splenectomy had been performed, by administering splenic pulp and thereby effected a conspicuous improvement in

the general condition of the patient who had previously derived no benefit from the arsenic and iron treatment.

Ovaria Siccata Pulverisata. (Ovarial.)—A considerable number of fresh communications have been published on the properties of ovarian preparations with respect to climacteric troubles. These communications confirm, in general, the favorable experiences of previous writers (see Merck's Report 1896, p. 118; 1897, p. 113), but furnish on the whole but little that is essentially new. Comprehensive papers on ovarian medication have been published by A. Alessandro (Archivio italiano di Ginecologia 1898, No. 1) nnd F. Matoni (Riforma medica 1898, vol. II, Nos. 51 and 52). Fresh aspects are presented by the experiments of Saalfeld (Deutsche med. Wochenschr. 1898, No. 7, Ver.-Beil. No. 5, p. 30), who applied successfully the ovarian substance for the direct treatment of climacteric affections of the skin, such as rosacea, eczema, herpetic eczema, prurigo and seborrhoea.

Seeligmann (Klin.-therap. Wochenschr. 1898, No. 13, p. 454) has advanced material, tending to prove that constitutional disorders, such as gout, psoriasis and affections of the brain, which reappeared in consequence of the climacteric, after remaining dormant for year, may be entirely suppressed or at least improved with the aid of the ovarian substance. The highest interest, finally, attaches to the experiments of F. Friedmann (Klin.-therap. Wochenschrift 1898, No. 32, p. 1156), who attempted to solve the problem recently revived by Schenk of the voluntary determination of the sex of the future individual by administering ovaria and spermine. He employed in fact ovarine for the purpose of destroying the female protoplasmic elements and spermine in order to destroy the male elements of the fertilized ovum. The result agreed with his expectations, for by his experiments on guinea-pigs he succeeded in producing a male individual by the internal administration of ovarine and a female individual by the subcutaneous injection of spermine.

Extractum Corporis ciliaris et Corporis vitrei liquid.—This is an extract obtained from the corpus ciliare and the corpus vitreum, to which are added glycerin and artificial serum in such proportions that 3 parts of the extract correspond to 1 part of fresh substance.

In addition to the extract of the corpus ciliare (Report 1897, p. 98) F. Lagrange (Clinique ophthalm. 1898, No. 16) employs an extract of the corpus vitreum in suitable cases of luxation of the crystalline lens, loss of the vitreous humour and detachment of the retina.

He administers the preparation both internally and externally, his internal doses being 3 small tea-spoonfuls per day, the subcutaneous dose 3 cc. (m. 48) per dose. This treatment is described as having in 5 cases, in particular as a remedy for detachment of the retina, produced a marked improvement of the local symptoms.

Literary.

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Gebrüder Borntträger—Berlin. Studien und Skizzen aus Naturwissenschaft und Philosophie von Dr. Ad. Wagner.

I. Ueber wissenschaftliches Denken und über populäre Wissenschaft. Ein Bd., pp. 79. 1899. M. 1.20.

II. Zum Problem der Willensfreiheit. Ein Bd., pp. 61. 1899. M. 1.00.

Deutsche Verlags-Anstalt—Stuttgart. Lexikon der gesamten Technik und ihrer Hilfswissenschaften. Herausgegeben von Otto Lueger im Verein mit Fachgenossen.

XXXV. Abtheilung: Terrazzo—Zwischentransport, pp. 641—1031. (Schluss.) 1899. Preis des ganzen Werkes M. 175.00.

Verlag von Julius Springer—Berlin. Hager's Handbuch der pharmaceutischen Praxis für Apotheker, Aerzte, Drogisten und Medicinalbeamte. Unter Mitwirkung von Max Arnold—Chemnitz, G. Christ—Berlin, K. Dieterich—Helfenberg, Ed. Gildemeister—Leipzig, P. Janzen—Perleberg, C. Scriba—Darmstadt, vollständig neu bearbeitet und herausgegeben von B. Fischer — Breslau und C. Hartwich — Zürich. Fünfte Lieferung: *Cacao* bis *Caro* pp. 529—656, mit zahlreichen in den Text gedruckten Holzschnitten. 1899. Erscheint in höchstens 20 Lieferungen @ M. 2.00.

Bulletin van het Koloniaal Museum te Haarlem. No. 21. Mei—1899. Inhond: Verslag over het jaar 1898, met Bijlagen. Brochure, pp. 56. 1899.

Author—Brooklyn. On acetic acid as a substitute for alcohol in extracting the active principles of some officinal drugs. By Dr. Edward R. Squibb. Ephemeris, vol. 5, No. 3. July, 1899. Pamphlet, pp. 30.

Author—Sydney, Australia. On a supposed new genus of the N. O. Myrtaceae. By R. T. Baker, Curator, Technological Museum. Pamphlet, pp. 6, with one plate.

Reviews.

Chemistry: General, Medical and Pharmaceutical including the Chemistry of the U. S. Pharmacopœia. By John Attfield. New (16th) Edition. In one Royal 12mo. volume, pp. 784, with 88 illustrations. Lea Brothers & Co., Philadelphia. 1899.

A book that appears with the impress of the sixteenth edition cannot be said to be in need of an introduction. The name Attfield is as well known to the English speaking pharmaceutical public as that of Hager is to German. The ordinary standards of critique are hardly applicable to a book of this kind. The following brief account of the history of this book make it seem as though English and American pharmacists had entered upon a friendly rivalry in their attempt to honor the author by the purchase of his manual:

"The First, in 1867, was intended as a handbook of practical chemistry only, but the notes and remarks made respecting most of the experiments were found to be so useful by students that this portion of the volume was in the Second Edition (1869) sufficiently extended to render the book more fairly complete in itself. It and all subsequent editions included the chemistry of the British Pharmacopœia. In response to a call from professional friends in the United States in 1870, the work was revised by the author for the followers of Medicine and Pharmacy in America, descriptions of the Chemistry of the Preparations and Materia Medica of the United States Pharmacopœia being introduced, while those specially British were curtailed, and such other adaptations were included as to form a Third Edition. A Fourth was presented to English workers in 1872, and, founded on the fourth, a Fifth Edition for American students in 1873. A very large Sixth Edition was published in England in 1875, and in America a Seventh in 1876, and an Eighth

in 1879, the Sixth and all following Editions containing notices of substances official in Waring's Indian Pharmacopœia. The Ninth, 1881, was an English Edition; the Tenth, 1883, an American; the Eleventh, 1885, English; the Twelfth, 1889, American; the Thirteenth, 1889, English; the Fourteenth, American; the Fifteenth, English.

While the sixteenth edition has made its appearance in this country, a seventeenth (British) edition is being published in England. We have no doubt, the book will continue to be useful in the sphere in which it has demonstrated its success. *E. K.*

THE NEWER REMEDIES, including their synonyms, sources, methods of preparation, tests, solubilities, incompatibles, medicinal properties, and doses as far as known, together with sections on organo-therapeutic agents and indifferent compounds of iron. A reference manual for physicians, pharmacists, and students, by Prof. Virgil Coblentz. Third edition, revised and very much enlarged. One vol., pp. 147. P. Blakiston's Son & Co. 1899. $1.00.

"If we consider the introduction of Kairin in 1882 as the beginning of the era of modern synthetic medication, and that up to 1896 such products, in addition to various proprietary combinations of similar character, numbered about 800, with a further addition of about 1200 during the last three years, the future of this subject appears to be entirely beyond all conjecture. The class of true synthetics, although they represent only a comparatively small fraction of the above number, has received many valuable additions since the last edition of this book, in 1896, as the following résumé of some of the more important groups will show. The paraphenetidin nucleus, which furnishes us with the valuable antipyretics Phenacetin, Phenocoll, Lactophenin, etc., has been drawn upon for such new combinations as Kyrofin, Phesin, Oxyphenacetin, and Vanillin-para-phenetidin.

The introduction of Eucaine 'A,' Eucaine 'B,' Holocain, Pyrocain, Orthoform, and Guaiacyl furnishes some formidable competitors for cocain. Among the newest synthetic mydriatics are Euphthalmin and Mydrol, the former being a mandelic acid derivative of the local anesthetic Eucaine 'B.'

The number of local and intestinal antiseptics with iodoform

substitutes has assumed formidable proportions, new compounds and combinations being almost of daily occurrence.

The increased interest in the silver antiseptic treatment may be shown by the addition of such organic combinations as Hydrogol, Protargol, Largin, Actol, Itrol, and Argentol. Among the newer nutrient and tonic albuminoids are Alueronate, Carniferrol, Casein-peptone, Eucasin, Nutrose, Protogen, and Sanose.

Of late years the subjects of animal remedial preparations and indifferent iron albumin compounds have attracted sufficient attention to induce the author to add a chapter devoted to a general explanation of the subjects as far as the scope of this condensed work permits.

In addition to giving as complete a list of all modern medicinal synthetics as possible, the author has endeavored to include all such proprietary combinations as are made up of mixtures containing one or more of these synthetics; also such other preparations as employ specially coined titles, many of which are deceptively similar to those of well-known chemic compounds.

The original orthography of all titles has been retained, excepting in cases in which a foreign manufacturer has made a slight change for the benefit of our market—as, for example, in Eucaine and Antipyrine, where a terminal 'e' has been added. In all other cases the author has adopted, so far as possible, the rules of chemic orthography as sanctioned by the A. A. A. S. in 1891. The composition of all proprietary combinations is given according to published analyses. Wherever possible, among the patented synthetics, the author has endeavored to include the name of the patentees."

To quote the preface of a work *in toto* as a review may not be in harmony with general custom, yet it will serve better to introduce this third edition than any critique by the reviewer. A detailed criticism is out of the question. American pharmacists can congratulate themselves that Professor Coblentz keeps up the revision of this very useful compilation. *E. K.*

SUPPLEMENT.

Universities and Colleges.

Notes.

Professor V. Coblentz's address during the summer is Nymphenburg, Muenchen, Germany.

The School of Pharmacy of the University of Illinois has lengthened its course by the addition of two weeks to each school year. Mr. E. D. Irvine, Ph. G., '93 C. C. P., succeeds Mr. George E. Case as assistant in pharmacy.

Prof. Wm. T. Wenzell has resigned the chair of chemistry in the School of Pharmacy of the University of California after having served for 27 years. Prof. Wenzell is one of the founders of the former California College of Pharmacy and recently celebrated the semi-centennial of his connection with pharmacy.

According to the report of Mr. A. K. Findlay, pharmacentical education in Louisiana, and in New Orleans in particular, has not approached the average. During the past year Tulane University had but 18 matriculates, of which number 11 graduated. The withdrawal of pharmaceutical instruction is regarded as the natural consequence of this neglect.

At the last commencement of its School of Pharmacy, Northwestern University bestowed the degree of Doctor of Pharmacy, *honoris causa* upon Professor Joseph P. Remington.

A year ago the Northwestern University School of Pharmacy announced that its course for the degree of Graduate in Pharmacy would be lengthened as soon as circumstances permitted. This change has now been made. Instead of two terms of twenty weeks each, that course will hereafter occupy two annual sessions of six month's each, with the student's whole time occupied upon his college work, to the exclusiou of concurrent drug-store employment.

Pharmaceutical colleges and schools have not been favored with legacies and bequests as liberally as almost any other class of institutions of learning. The Massachusetts College of Pharmacy seems to have been one of the more favored ones in this respect. It ought to do no harm and may do some good to call attention to these donations as recorded in the last catalogue of the college.

In 1872, Mr. Chas. French, of Boston, left a legacy of $2000 to the College. The Committee of Reception in Boston of the American Pharmaceutical Association, in 1875, donated $500, the unexpended balance of their funds, to the College, in aid of its building fund.

In 1890, Miss Mary J. Aldrich, of Boston, Mass., left $5,000 to the college, to be permanently invested, the income to be used as needed. In 1893 the college received an additional $2,255 from the Mary Jane Aldrich estate, which was placed with the permanent fund standing in the name of the donor. In 1892, James S. Melvin, for many years a trustee of the college, left $1,000 to the college, which is invested, and its income only used. In June, 1896,

the college came into possession of $2,500, willed by Charles Mead. This money has been invested under the name of the Charles Mead Fund, the income only to be used. These funds are named after the donors, and held by trustees appointed to care for them.

American Pharmaceutical Association. Section on Scientific Papers. —Members of the American Pharmaceutical Association are cordially invited to present communications at the meetings of this section to be held at Put-in-Bay, September 4th to 18th next. The attention of contributors is respectfully directed to the resolution adopted at the last meeting, to the effect that the official printer be requested to return to the author any paper or papers not bearing the approval of the Chairman of some Section of the Association.

The printing of papers previous to their reading is optional with the authors, but no paper can be received for this purpose later than August 8.

Attention is also called to the resolution of 1895 (Proc., xliii, 236) requiring that any paper, the reading of which would require 15 minutes or more, be read in abstract.

The list of queries here proposed is but brief, as it appears that contributors usually prefer to select their own subjects. Papers may be sent to any member of the Committee.

1. Is it practicable to provide an illustrated set of color-standards in the U. S. P.?

2. Is it practicable to provide a set of odor-standards in the U. S. P.?

3. Methyl alcohol corresponds very closely to ethyl alcohol as a menstruum for drugs; what objections can be made to its employment in making solid extracts?

4. Glycerin aids materially in preserving hydrocyanic acid and spirit of nitrous ether; is its use desirable from a dosimetric and therapeutic point of view?

5. Is it proper to make belladonna preparations from Scopola in the face of the present U. S. P. definition? Should the U. S. P. change its definition so as to sanction the use of this rhizome as an alternative?

6. Is physiological action requisite as a department of pharmaceutical research?

7. What is the effect of the high price of ipecac upon the quality of ipecac preparations supplied?

8. Many imported drugs, such as opium, lactucarium and saffron, could be cultivated in the United States were the question of wages eliminated. An investigation into the feasibility of such culture on the convict farms of several States of the Union is desired.

9. To what extent are medicinal plants cultivated in the United States?

10. How can Syrupus U. S. P. be best obtained of a uniform quality and density without undue cost?

11. Potassium and sodium acetates frequently contain a large amount of free acid. Samples containing more than 10 per cent. of free acid have been obtained. What is the reason of this?

12. Recent research seems to show that the coloration of syrup of ferrous iodide and syrup of hydriodic acid is not due to the separation of free iodine. Further work on this subject is desired.

13. Is the U. S. P. 1890 process of preparing syrup of ferrous iodide as satisfactory as the process of 1880? A critical comparison is invited.

14. A report on the quality of commercial syrup of ferrous iodide, with special reference to preservatives employed, is desired.

15. What is the quality of calcium hypophosphite found in commerce? What influence has this on syrup of hypophosphites prepared therefrom?

16. Is "old cascara" any better than "new cascara" for preparing a bitterless extract? A good formula for the latter is desired.

17. Have ambergris and civet been relegated to the past in perfumery? There is evidence that they are not being used in the later extracts.

H. H. Rusby, Chairman,
115 W. 68th St., N. Y.
H. V. Arny, Secretary,
107 Streetor Ave., Cleveland, O.
W. L. Scoville,
St. Botolph & Garrison Sts., Boston, Mass.

Proper Objects of the American Association for the Advancement of Science.*—The objects of the American Association for the Advancement of Science are clearly expressed in the opening paragraph of its constitution, which was adopted at its first meeting, held September 20, 1848, in Philadelphia. From that day to this the paragraph referred to has not been modified except by the replacement of three words, viz., "the United States" by a single and more comprehensive word—"America."

As here defined, the objects of the association are "to promote intercourse between those who are cultivating science in different parts of America, to give a stronger and more general impulse and a more systematic direction to scientific research in our country, and to procure for the labors of scientific men increased facilities and a wider usefulness."

Three distinct elements are included in this general statement, viz.: (1) The cultivation of personal intercourse or acquaintance among the workers in science in this country; (2) the encouragement, extension, and proper direction of scientific research; (3) the gaining of popular recognition and good will for the results of scientific work. These objects may be conveniently summarized as (1) social, (2) scientific, (3) practical.

1. Is the social feature of the association, to which the first place was assigned by the founders, whether by design or not, worthy of preservation by us? In other words, is it as important "to promote intercourse between those who are cultivating science in America" at the close of the nineteenth century as it was at the middle of the century—the need that was responded to by the formation of the American Association for the Advancement of Science? While revolutionary changes have taken place in the country at large during this period, in modes of travel, facilities for acquiring education, and the diffusion of intelligence, it would be hard to show why the need in this field should be in any respect less urgent. There is

* By Edward Orton, Professor of Geology in Ohio State University; President-Elect of the American Association for the Advancement of Science.

a far larger number of people who are cultivating science, and there are many more branches of science to be cultivated.

What particular service is to be expected from such intercourse as the association seeks to provide? The gathering of the workers in the diverse fields of science into a single organization has a tendency to unify them. They find that a common spirit animates them, that they all make use of essentially the same method of research or inquiry, and that the results which they reach all have a common note of certainty, being herewith differentiated from other and older views on the same subjects, as knowledge differs from opinion. They are thus led to see more clearly than they could otherwise see the unity of the universe, that knowledge is one, and that each science is but a facet cut on the crystal sphere of natural truth, touching other facets at many points, and by no means independent, but supported by the integrity of the sphere.

Such a gathering tends to an increase of mutual respect and confidence on the part of all engaged in scientific work. It tends to discourage the narrow conceit of the specialist, who, if left entirely to his own tastes, comes to think that his own facet is the only one that deserves to be regarded, and practically to ignore its relation to the sphere of which it constitutes an essential though a minor part.

Such an association tends toward making specialists intelligible to each other. In other words, it puts a premium on the art of popularizing science, for when the specialist makes himself intelligible to his brethren in their widely separated fields he makes himself intelligible to all educated men, whether especially trained in science or not.

The specialist is under a strong temptation to limit himself to a language of his own, which is an unknown tongue even to the rest of the scientific world. Technical terms, carried out to minute subdivisions, are indispensable in every branch of modern science, but the student of any science is in an evil state who can not present his results to the world without appealing to the technical jargon of the branch which he cultivates.

There even seems a reluctance on the part of some to use plain language in stating scientific conclusions, as if the cheapening of science were feared by its being made intelligible. Such a fear is certainly unworthy. The masters have never felt it. In lucidity and directness of speech and in general intelligibility Tyndall, Huxley, and Darwin were not surpassed by any men of their generation. To whom are we as much indebted for the great advance of science in their day as to these very men?

If the scientist neglects this popularizing of science, the sciolist is sure to take it up, and his work in this field always makes the judicious grieve. Is there not possible danger that this phase of scientific work and the function of the association corresponding thereto are losing consideration to some extent?

But instead of its being true that the scientific work of the country has outgrown the need of the association, is it not rather true that we are in far more urgent need of its unifying agency than even the

founders were fifty years ago? We have all the divisions of science that were then recognized, and half as many more. Physics and chemistry could then be classed in one section without offense, and zoölogy and botany were assigned without protest to a single heading. Now, not only does every science demand recognition by and of itself, but all are represented by separate societies as well—as the Mathematical Society, the Chemical Society, the Geological Society, etc. These societies hold meetings, publish bulletins, reports, and sometimes monthly journals, and, in short, aim to cover the entire field for the branches which they represent. They are generally affiliated with the association, and it is becoming usual for them to hold joint summer meetings of society and section. Their annual meetings are held in the winter, and, as their membership is more select than that of the association, standing as it does in all cases for published or recognized work already in evidence, these winter meetings are coming to be preferred for the presentation of technical papers. Those who read them feel sure of ñt audience, though few.

These societies are all vigorous and successful. They obviously meet a "felt want" on the part of American science, but just what their effect will be upon the association remains to be determined. Certainly, with these centrifugal tendencies in growing activity, this is not the time for the attraction of our one centripetal force to be relaxed. More than ever do we need such a unifying agency as the association was designed to supply.

Some modus vivendi between section and society will doubtless be found. Perhaps the more abstract and technical papers will be reserved for the winter meetings, while those dealing with the larger phases, and especially those pertaining to the philosophy of the subjects discussed, will find their places in the joint meetings of the summer.

Of the second object, Prof. Orton concludes that "while the result aimed at deserved the prominence given to it fifty years ago, it no longer depends on the association for its accomplishment."

He then concludes with the following sentence: "At the end of the century we who have shared in the mighty advance and who have been taught by our experience to discard limitations in the possibilities of the future, feel the same and an even more urgent need of some unifying and interpreting agency for the ever-widening fields to which the method of science is now applied."

CATALOGUES RECEIVED:—

Brooklyn College of Pharmacy—Brooklyn, N. Y. Ninth annual announcement. Session of 1890—1900.

University of California Coll. of Pharm.—San Francisco. Announcement for 1899 — 1900. Twenty-eighth annual session.

Chicago College of Pharmacy—Chicago. (School of Pharm. Univ. of Ill.) Fortieth annual announcement. Session of 1899—1900.

Highland Park College of Pharmacy—Des Moines, Ia. Announcement. School year 1898—1899.

Maryland College of Pharmacy—Baltimore. Annual Catalogue. Session of 1899—1900.

Massachusetts College of Pharmacy—Boston. Thirty-third annual catalogue. 1899—1900.

Medico-Chir. Coll. of Phil., Dept. of Pharm.—Phila. Announcement for 1898—1899.

Meharry Med., Dent. and Pharm. Dept—Nashville, Tenn. Announcement for 1899—1900.

Univ. of Mich. School of Pharmacy—Ann Arbor. Announcement for 1899—1900. Register of alumni for 1895—1898.

Northwestern Univ. School of Pharm.—Chicago. Circular of information for 1899—1900.

Ontario College of Pharmacy—Toronto. Annual announcement. Twentieth session. 1899—1900.

University of Pennsylvania—Philadelphia. Circular of information I: Courses in chemistry and chemical engineering.

St. Louis College of Pharmacy—St. Louis. Prospectus. Thirty-fourth annual session. Oct. 2, '99 to Apr. 14, 1900.

Vanderbilt University, Dept. of Pharm—Nashville. Announcement, 1899—1900.

University of Wisc.—Madison. Bulletin No. 29. School of Pharmacy: Special announcement for 1899—1900.

Bibliography.

The mighty evolution of pharmaceutical and chemical industry of the last century is once more brought to our attention in the neatly gotten up and highly illustrated pamphlet of the Chemische Fabrik auf Actien in Berlin and Charlottenburg. E. Schering, the founder of the present corporation, bought a pharmacy in Berlin in 1851, since then known as the "Gruene Apotheke". Recognizing the tendencies of the times and wide awake to meet their demands, he began his researches in pharmaceutical chemistry. So successful was he that but two years later he could establish a small chemical factory in addition to his pharmaceutical laboratory. In 1873 the factory had grown to such an extent that the appointment of another manager became necessary. J. F. Holtz, the proprietor of the royal "Hofapotheke" in Charlottenburg, who, like his university colleague, had started a small chemical factory, was elected. Thus the present factory employing 20 chemists, 60 clerks, and more than 600 laborers has had its origin in two pharmacies on the Spree. *Tempora mutantur.* Will pharmacy at large keep up with the times?

The development of a pharmaceutical factory in the very heart of London, supported by American brains is an accomplishment that is as worthy of our attention as the invasion of England, the home of the iron and steel industry, by American machinery is attracting the attention of the country at large. Several years ago the Wellcome Research Laboratory was established and Dr. F. B. Power was made its Director. The introduction of scientific research on a large scale by Burrroughs, Wellcome & Co. has evidently born fruit, for not only has Dr. Power moved with his staff into a new building, but the number of employees has grown rapidly and now numbers over 800. The transfer of the factory to the new buildings at Dartford, outside of London, has

given an American business man an opportunity to show that he has heart as well as brains. "There is a time for work, and a time for play" is the motto displayed on the cover of a pamphlet that is not only unique but deserving of attention outside the ranks of pharmacy. The Inauguration of the Wellcome Club and Institute at Dartford on June 24 marks another milestone in the history of pharmaceutical manufacturing. How the extensive grounds and buildings with opportunity for all kinds of mental and physical recreation remind one by contrast of Shakespeare's description "There was an apothecary" with his dingy hole decorated with reptiles. Again we are impressed with this adage *Tempora mutantur.* Will pharmacy at large keep up with the times?

P. Blakiston's Son & Co. send us a copy of the British Food Journal and Analytical Review, the official organ of the International Commission on Adulteration. With the present agitation for pure food and drugs in this country, this English journal ought to find many an interested reader.

Studien und Skizzen aus Naturwissenschaft und Philosophie is the title of a new series of booklets, published by the Gebrueder Borntraeger, and of which Dr. Adolf Wagner is the author. The object of these essays is to awaken and maintain an appreciation for the most important problems of the natural sciences and philosophy. Above all they are to stimulate individual thought and thus they will differ from most popular scientific publications, the principle object of which is to impart scientific facts. As to manner of presentation the academic style, not at all essential to a genuinely scientific discourse, is to be avoided. Each volume is to be a unit by itself, but in order to avoid repetition reference to earlier presentations will be made. The titles of the two volumes already published are given on p. —. The following are some of the themes to be discussed in subsequent numbers:

Die Entwicklung in der Natur.
Descendenzlehre und Darwinismus.
Zum Problem der Willensfreiheit.
Die Philosophie des Egoismus.
Mechanismus und Organismus.
Der Instinkt,
Ueber apriorische Erkenntnisse.
Das Princip der Arbeitstheilung.
Ueber positive Naturerklärung.
Entwicklungs-Mechanik.
Moral und Intellect.

Catalogues Received:—

J. B. Baillière et Fils—Paris. Le Mois Médico-Chirurgical. Avril et May, 1899.

Martin Boas — Berlin. Medicinischer Anzeiger. No. 2.

F. A. Brockhaus—Leipzig. Monthly list of new books. May, 1899.

Lemcke & Buechner—New York. Monthly bulletin of world-literature. April, 1899.

The Macmillan Company—New York. Book Reviews, Vol. 7, No. 6.

U. S. Dept. of Agr.—Washington. Monthly list of publications. May, 1899.

Miscellaneous.

Pottery Making and Lead Poisoning.* — The report of Professors Thorpe and Oliver on the subject of the employment of compounds of lead in the manufacture of pottery, especially in its relation to the health of the work people, has just been issued as an English blue book. It appears that of the total male

* Pop. Sc. Monthly.

workers in the year 1898, 4.9 percent became "leaded," while of the female workers the proportion was 12.4 percent. It is stated that in the last six months many successful attempts have been made by the manufacturers to substitute a leadless glaze, and there seems no doubt that glazes of sufficient brilliancy, covering power, and durability are now within the reach of the manufacturer. The exclusion of women from certain parts of the work, except where leadless glazes are used, is advocated, and also various expedients for preventing the absorption of the lead by the skin, such as rubber gloves or "dipping" tongs. Their general conclusions are as follows: "That by far the greater amount of earthenware of the class already specified can be glazed without the use of lead in any form. It has been demonstrated, without the slightest doubt, that the ware so made is in no respects inferior to that coated with lead glaze. There seems no reason, therefore, why in the manufacture of this class of goods the operatives should still continue to be exposed to the evils which the use of lead glaze entails. There are, however, certain branches of the pottery industry in which it would be more difficult to dispense with the use of lead compounds. But there is no reason why, in these cases, the lead so employed should not be in the form of a fritted double silicate. Such a compound, if properly made, is but slightly attacked by even strong hydrochloric, acetic, or lactic acid. There can be little doubt that, if lead must be used, the employment of such a compound silicate—if its use could be insured—greatly diminish the evil of lead poisoning. The use of raw lead as an ingredient of glazing material, or as an ingredient of colors which have to be subsequently fired, should be absolutely prohibited. As it would be very difficult to insure that an innocuous lead glaze shall be employed, we are of opinion that young persons and women should be excluded from employment as dippers, dippers' assistants, ware cleaners after dippers, and glost placers in factories where lead glaze is used, and that the adult male dippers' assistants, ware cleaners, and glost placers should be subjected to systematic medical inspection. In the 1893 report the medical members of the committee expressed the opinion that 'many old factories are wholly, or in part, unfit in a sanitary point of view for occupation,' and they suggested that 'there should be some authority to close them, or whatever part of them is condemned, on the same principle as dwellings are declared uninhabitable.' We share this opinion and we concur in the suggestion. Certain of the factories we have inspected are in the last stages of dilapidation, and it appears to us to be well nigh impossible to introduce into them such rearrangements or additions as are required by the amended special rules."

Commercial.

PRICE-LISTS RECEIVED:—

Max Kohl—Chemnitz. 1) The instruments for producing Roentgen's X-rays and manner of their application. 2) Novelties, 1898, upon the subject of Roentgen's X-rays. 3) Neuheiten, 1899, auf dem Gebiete der Roentgen-Strahlen.

E. Sachsse & Co.—Leipzig. Vorzugs-Preisliste: Aetherische Oele, Mai, 1899.

Pharmaceutical Review.

VOLUME 17. SEPTEMBER, 1899. NUMBER 9.

Editorial.

During the past month the American Association for the Advancement of Science held its fifty-first annual meeting at Columbus, the capital of Ohio, where is also located the state university. The President of the A. A. A. S. is also a past president of the Ohio State University and still occupies the chair of geology at that institution. Last month we called attention to an article from his pen on the "Proper objects for the American Association for the Advancement of Science" (p. 379). The affiliated societies have also held their meetings during the week previous to the A. A. A. S. meeting, during intermissions in the same week and also during the week following. Chemists are reported to have been, numerically at least, the strongest. This is due, no doubt, to the joint session of the American Chemical Association with the Chemical Section of the A. A. A. S.

The British Pharmaceutical Conference—not Pharm. Soc. of Great Britain—held its thirty-sixth annual meeting at Plymouth late in July. Considerable satisfaction seems to have been given by the revisiting of this historic sea-port town after 22 years. A matter of coincidence would have it that the President of the Plymouth meeting, Mr. J. C. C. Payne, was then present for the first time at a meeting of the B. P. C. The object of his first visit had been to convey an invitation from the Council of the Pharmaceutical Society of Ireland to the British Pharmaceutical Conference to hold the following year's meeting for the first time on Irish soil, in the City of Dublin. This year it was an Irishman who addressed the B. P. C. at Plymouth as its president. A list of papers read is given in the Supplement and abstracts of these papers are also published in this number. Mr.

E. L. Holmes, Curator of the Museum of the Pharmaceutical Society of Great Britain, was elected President of the Conference for next year, when the meeting of the outgoing year of the 19th century will be held in London.

The American Pharmaceutical Association begins its forty-seventh annual meeting with the first general session at 3 o'clock Monday afternoon, September 4th, at the Hotel Victoria, Put-in-Bay Island, Ohio. The attractions of this summer resort in addition to those of the meeting ought to assure a good attendance. A good meeting may be looked for.

Most of the state pharmaceutical associations, however, have held their annual meetings. In most cases these meetings were the first held since the organization of the National Association of Retail Druggists. It was but natural, therefore, that, on the whole, the commercial aspects of the drugtrade should have received the time and attention which was bestowed upon them.

As a rule we do not look to these meetings for events of special national significance. We are not aware that anything that has been accomplished during the past season will prove an exception to this rule. Matters primarily of local interest seem to have given some zest to several meetings, e. g. in New York, Pennsylvania and Wisconsin. It is even possible that the question of requiring graduation from some reputable college of pharmacy before a candidate may present himself before the state board for examination will again draw attention to educational matters in general. Pharmaceutical legislation has played a prominent role at the meetings of the American Pharmaceutical Association during the past few years. Possibly the time has arrived for the pendulum to swing back to the subject of education. The question precipitated in Pennsylvania and New York as a local one touches legislation as well as education and might fittingly serve as a means of transition.

The Wisconsin association, aside from its honorary members, has classified its members into active and associate members, restricting the vote to the former class consisting of retail druggists. This action was undoubtedly prompted by the legitimate desire of the retail druggists to strictly control their own affairs as far as lies in their power. It certainly ought to do away with some of the abuses

which have been practiced in this asociation for some time. As to how much actual good will be accomplished by this step, the future alone can decide.

That the Wisconsin druggists are willing to pay for their independence, is further shown by the fact that the Association boasts of never having asked manufacturers or jobbers for advertisements with which to pay for the printing of their proceedings. Yet their treasury has never been empty and the Association has repeatedly given financial assistance to its committees.

This is indicative of a manly spirit. It is all the more surprising, therefore, that the Association should permit itself to be entertained almost exclusively by the traveling men and the firms they represent; and not only permit it but apparently expect it. Two reports of the last meeting have come to hand at the time of this writing. The one by the Secretary of the Janesville meeting occupies about nine columns of the Wisconsin Druggists' Exchange: which space is about equally divided between the business transactions, including the Secretary's and Treasurer's reports; and a report of the amusements, more than two columns being devoted to an enumeration of prizes for games etc. and their winners.

The writer has no more fault to find with druggists who want to have a good time racing and jumping than with any other class of people indulging in such sport. The Milwaukee Pharmaceutical Society, after a years hard work, held its second annual picnic not long ago. It was a quiet family affair and every one had a good time, such as the hard worked druggist possibly should have oftener than once a year. Furthermore, there may be no valid reason why druggists as individuals should not take part in a general carnival. It is quite a different thing, however, if a state pharmaceutical association makes its annual business meeting, in fact the only meeting of the year, one in which sport occupies so prominent a place that in the official report this phase of the meeting calls for one-half of the space, and winds up with a masked parade through the streets of the place of meeting, affording a free show to the citizens comparable only with a circus parade.

The writer does not dote on dignity. As far as we are individuals, to the dogs with all foolish dignity. As a state association, however, we should be careful lest we degrade our calling. The man who,

not as an individual, but, be it understood, as a representative of his calling makes a public clown of himself cannot expect the physician to respect him, or his sick constituent to pay him a professional price for his services when he appears behind the counter the next day.

It may be said that this is a local affair and of no national concern. This is no more true than yellow fever is a mere local matter. The "Missouri idea" has not only spread, but has taken such forms that even Missourians disown the Wisconsin variety. It may further be said that the Wisconsin Druggists Exchange, "the official paper" of the Wisconsin Pharmaceutical Association, is ostensibly and *de facto* a local paper, and that the report referred to above will hardly be noticed outside of Wisconsin. This may be true, yet the other report alluded to is to be found in the Pharmaceutical Era, the newspaper of the American druggist. It contains a one-column report of the Wisconsin Pharmaceutical Association, whereas four other associations receive less space put together. Yet the report concerning the annual meeting of the W. P. A. contains little of import outside of the enumeration of officers elected. Most of the space is devoted to amusements, yet after the circus parade "everyone returned to the hotel fully satisfied that they had attended the most enjoyable and one of the most profitable and important meetings the association ever held." We do not know who wrote this report, but we are tempted to ask the editor of the Era how these attributes are compatable under the conditions described. It is about time for him to write another of his straightforward editorials on "mule races" etc. as competitors of business transactions at our state association meetings.

It may be said of the writer, no doubt with some truth, that he is nothing if not critical. In reply he may be permitted to state that he takes no pleasure whatever in criticising the doings of the druggists of his own or any other state, many of whom are his personal friends. But who would be a true friend of the druggist if he dared not speak on an occasion like this. The druggist may complain of the self-dispensing by physicians, but could the greatest enemy of the druggist devise something that would more effectually destroy the physician's confidence in him than a state association meeting conducted in a manner as described in the two reports referred to? He may complain about the unwillingness on the part of the public

to pay a reasonable price for his prescriptions, but has a person who acts as a free-show clown one day a right to ask for a professional price the next?

It is true these complaints were justified before the spread of the "Missouri idea," but will the "Missouri idea" or its Wisconsin outgrowth help him to overcome these difficulties?

It is also true that the majority of the druggists of Wisconsin do not take part in this tomfoolery. It has been stated more than once by druggists themselves and by traveling men that the W. P. A. is not representative of the druggists of Wisconsin. The above view is not merely that of a hypercritical "professor." The above lines when written were submitted to a druggist who not only agreed with the views expressed, but who added that he should be mortified to have any thing of the kind occur in his city.

The Electrical Conductivity of Non-aqueous Solutions.*

By *A. T. Lincoln.*

Van't Hoff formulated his modern theory of solutions from the results of Pfeffer's classic experiments on the osmotic pressure of aqueous solutions, and from the work of de Vries, who pointed out that equimolecular quantities of dissolved substances produce the same osmotic pressure. Van't Hoff stated that the conditions of a substance in the gaseous state is analogous to the condition in which a substance exists in dilute solutions wherein the osmotic pressure of the dissolved substance corresponds to the pressure of the gaseous particles. It was soon observed, however, that many substances did not give normal values for the osmotic pressure, the rise of the boiling, or lowering of the freezing point; and thus that the laws of gases would not hold for solutions of these substances.

Arrhenius pointed out that those substances which yield solutions in water that conduct electricity are acids, bases and salts (called electrolytes); and that they are the same class of compounds as give abnormal values for the osmotic pressure, the rise of the boiling point and the lowering of the freezing point in aqueous solutions.

* A résumé of a thesis submitted for the doctor's degree at the University of Wisconsin, June 1899. The experimental data can be found in the complete paper published in the Proceedings of the Wisconsin Academy of Sciences, Arts and Letters.

In order to explain these anomalous results, Arrhenius promulgated his well known theory of electrolytic dissociation, which has been very widely accepted. The theory has, however, met with very strong opposition, particularly from the English chemists. Some English scientists contend that the supposition that the molecules of the dissolved substance are electrolytically dissociated is not necessary to explain the facts and that in many cases it is not adequate. However, the dissociation theory has stimulated the investigation of aqueous solutions, particularly as to their electrical conductivity. Attention has also been directed to the study of mixtures of water with other solvents, and more recently, the attention of scientists has been directed toward the character of solutions other than aqueous.

The degree of dissociation in aqueous solutions is calculated from determinations of the electrical conductivity and also from the rise of the boiling point and the lowering of the freezing point of the solutions; and the results show very close agreement. Hence in connection with the conductivity measurements of non-aqueous solutions, it is desirable to have boiling point and cryoscopic determinations to aid in ascertaining the molecular condition of the dissolved substance. Since these methods are employed to determine to what extent the dissociation has taken place in aqueous solutions, one would naturally be inclined to apply them to non-aqueous solutions; for it is reasonable to suppose that the methods are as applicable to one solvent as to another. The advocates of the electrolytic dissociation theory state that whenever any solvent yields solutions that conduct electricity, the dissolved substance is dissociated electrolytically, and consequently the solvent possesses dissociative power. This meaning of the term, dissociative power, will be retained throughout. The agreement between the values for the degree of dissociation in non-aqueous solutions as calculated from the boiling point or the cryoscopic, and from the conductivity determinations, is not nearly as close as in the case of aqueous solutions. This has been previously pointed out by Woelfer, Carrara, Cohen and others and the author has again emphasized the fact. In many cases the boiling point determinations show practically no dissociation, while the solution conducts well. It must be remembered, however, that a slight amount of dissociation cannot be detected by the boiling point method; and where the conductivity is slight, the dissociation might be sufficient to account for it. However, this difficulty would not be experienced

in solutions that conduct well. Since these methods are used to determine the degree of dissociation and the results show so slight an agreement in non-aqueous solutions, it seems but proper to ask which of these methods shows the correct degree of dissociation; and one might further ask which of the methods is a measure of the dissociative power of the solvent.

In face of the data that have been collected, and in view of the fact that such a large number of chemists to-day do not accept the electrolytic dissociation theory as applied to aqueous solutions even, one may well hesitate to apply this theory to non-aqueous solutions until there is a sufficiently firm experimental basis to justify it. The chief purpose of this investigation, the results of which are incorporated in this paper, is to show to what extent the theory of Arrhenius, which is based upon the behavior of aqueous solutions, can be applied to non-aqueous solutions.

In an investigation of the electrical conductivity of non-aqueous solutions, the chief requirement is that both the solvents and the dissolved substances be absolutely free from water. Then, too, the question arises as to what anhydrous salts are soluble in the various solvents. This could only be answered by experiment in many cases. The work of other investigators along this line has been confined almost exclusively to salts of the alkalies, ammonium and the substituted ammonias. The author's investigation was confined to about twenty salts of the heavy metals (mostly chlorides) and to about eighty liquids which include the common types of the principal classes of organic solvents. In order to determine what solvents yield solutions that conduct electricity and to estimate roughly at least the relative magnitude of the conductivity, as well as to ascertain what solvents yield solutions having a conductivity sufficient to justify quantitative measurements, it was necessary to perform an elaborate series of qualitative experiments.

Through the efforts of various investigators a large number of facts have been accumulated which have been rather difficult to explain satisfactorily by means of the generally accepted theory of electrolytic dissociation. From time to time additional theories have been promulgated to explain these facts; until, at the present time, many have been advanced by means of which explanations have been attempted and from which generalizations have been drawn—in some cases apparently without sufficient experimental data to warrant

them. A brief survey of the explanations offered will be given and an effort will be made to show wherein these are not reconcilable with the experimental results presented.

In aqueous solutions, the molecular conductivity of solutions increases with the dilution, and this is, in general, the case in non-aqueous solutions. The author has pointed out a number of cases where the conductivity decreases with the successive dilutions. This has also been pointed out by other investigators and very recently by Euler. The molecular conductivity of aqueous solutions increases with the temperature and this is usually true for non-aqueous solutions. In some cases, however, the conductivity remains virtually constant with an increase of temperature, while in others it decreases. Another fact that seems to be rather difficult to reconcile with the electrolytic dissociation theory is that mixtures of methyl alcohol and water, even to 60 percent of alcohol, yield dilute solutions the conductivity of which is less than that of like solutions in absolute alcohol.

From a consideration of the optical properties of solvents, Brühl comes to the conclusion that oxygen is generally tetravalent. He attributes the polymerization of the molecules of water and of other oxygenated liquids, their high specific inductive capacity, as well as the dissociative power exerted upon the dissolved substance to their being unsaturated compounds. It is true that a great many oxygenated solvents do yield solutions that conduct electricity but it has been pointed out by Dutoit and Friderich and confirmed by the author that the ethers and the esters which are not polymerized solvents yield solutions that do not conduct, or the conductivity of which is very slight. Ethyl carbonate does not yield solutions that conduct. The same is true for chloral solutions, and the ethers of high carbon content yield solutions the conductivity of which is very slight. In the case of the substitution of chlorine for the ethoxy group in ethyl carbonate the number of spare valences is undoubtedly reduced, yet this product, ethyl chlorcarbonate, yields solutions that conduct well.

In compounds containing nitrogen, Brühl holds that the conductivity of their solutions is due to the extra valences of the nitrogen. He states that, in general, the dissociative power in the case of nitrogen compounds will vary with the nitrogen content, without being proportional to it, however; just as he claims it varies with

the oxygen content of oxygen compounds. He predicts that hydrazine, anhyrous cyanic acid, diazo compounds and even unsaturated compounds of the elements other than oxygen, namely phosphorus and arsenic trichlorides, mercaptans and sulphur ethers, will possess dissociative power. When the CN group is substituted for hydrogen in ethyl acetate, the conductivity is materially changed. In general, nitriles do yield solutions that conduct very well. Contrary to Brühl's predictions, phosphorus trichloride does not yield solutions that conduct; but in the case of arsenic trichloride his prediction is confirmed. Werner found that solutions of cuprous chloride in methyl sulphide conduct poorly. From the evidence we have at present it seems that the theory that the dissociative power of solvents is due to the unsaturated valences, that is, that the only solvents which yield solutions that conduct electricity, are unsaturated compounds, is not substantiated by the facts in many cases. Therefore the theory as promulgated by Brühl is untenable.

It is quite noticeable that a large number of the investigators of the properties of non-aqueous solutions, express the thought that there is manifested considerable influence between the dissociative substances and the solvent. This factor of the influence of the solvent upon the dissolved substance, is one that is no doubt of very great importance; and in the development of the electrolytic dissociation theory, the action of the solvent upon the dissolved substance has been entirely neglected.

Fitzpatrick concludes, from his investigation on the conductivity of alcoholic solutions, that the action of the solvent upon the dissolved substance is a chemical one. He cautions one against regarding the solvent as a medium in which the salt particles are suspended or as a dissociating agent. Wildermann on the other hand recognizes two kinds of dissociation—one, the electrolytic dissociation of the dissolved substance, and, the other, the dissociation of the larger molecular aggregates into smaller ones. He further maintains that solutions of all substances, whatever the solvent or the concentration, undergo electrolytic dissociation.

Cattaneo was impressed with the fact that the molecular conductivity is greatly influenced by the nature of the solvent employed. He was not able, however, to point out any direct relation existing between the various properties of the solvents which yield solutions that conduct electricity. Konovaloff, from his work on the amines,

concludes that only those solvents that react chemically with the dissolved substance yield solutions that conduct. It is true that there are many solvents of this nature which do react with the dissolved substance and the resulting solution does conduct electricity. Picric acid reacts with benzene but the resulting solution does not conduct electricity. Hence chemical combination of the dissolved substance with the solvent may take place and yet the solutions need not necessarily conduct. Werner has isolated and analyzed a larger number of products of pyridine and piperidine, among other organic solvents, with salts of the heavy metals. From the boiling point determinations, the molecular weights of these salts seem to be very slightly influenced by their union with the solvent. This is analogous to the fact, that salts which crystallize from an aqueous solution with water of crystallization yield the same molecular weights whether dissolved in the anhydrous form or with their water of crystallization.

It has been pointed out by Ciamician that the dissociative power of a solvent depends principally upon its chemical structure. That is, compounds of the same chemical type, for example the HOH type, yield solutions that conduct well. This is true in the case of alcoholic solutions which are not, however, the only class of compounds that possess dissociative power. In general, if one member of a particular type of compounds (e. g. nitriles), yield solutions that conduct, it has been found that other members also possess this property; and if a member of some other type (e. g. hydrocarbons), is found to yield solutions that do not conduct, other members do not possess dissociative power. No rigid classification can be made; but, in general, solutions of the hydrocarbons and their halogen substitution products do not conduct. Alcoholic solutions conduct well and the conductivity, in general, decreases with the increase of the carbon content. Solutions in esters conduct, but those of high carbon content usually yield solutions that conduct very poorly. The ketones and the aldehydes yield solutions that conduct well. Of the nitrogen compounds, liquid ammonia and ammonia substitution products, or amines, conduct. The nitriles of both the aliphatic and aromatic series yield conducting solutions; and of the organic bases, pyridine and quinoline come under the same category.

The data collected are, as yet, insufficient to show what the relations between solvent and dissolved substance must be in order to yield solutions that conduct electricity. Enough facts have been

presented, however, to make it apparent that any theory that aims to explain the electrical conductivity of solutions in general, must take into consideration the influence of the solvent upon the dissolved substance. This subject is replete with interest; for closely connected with it is the true cause of the solubility of substances.

Dutoit and Friderich, from the results of other investigators and from their own researches on the ketones and nitriles, conclude that the conductivity of electrolytes in non-polymerized liquids is nil. From the data collected it becomes apparent that all those solvents which yield solutions that conduct electricity are not polymerized liquids. In the case of quinoline, paraldehyde, piperidine, nitrobenzene, ethyl acetoacetate, benzonitrile and benzaldehyde, the coefficient of association as given by Ramsay and Shields is less than unity and indicates that the molecules of these solvents are not polymerized; they yield solutions that conduct and some of which conduct very well. Many compounds whose molecules are polymerized yield solutions that conduct, yet there are solvents whose molecules are supposed to be polymerized that do not yield solutions that conduct. It therefore appears that the theory as promulgated by Dutoit and Friderich, that only polymerized solvents yield solutions that conduct, is untenable.

Sometime before Dutoit and Friderich published their conclusions, Crompton assigned a wider rôle to the dissociative property of liquids. He presents the view that by means of this theory of association the anomalous results obtained in the case of certain dissolved substances by the boiling point, cryoscopic, or osmotic pressure determinations can be easily explained and he aims to show that the electrolytic dissociation theory is not only unnecessary, but in many respects inadequate. Nernst has called attention to the fact that solvents which have a high specific inductive capacity yield solutions that conduct; and he argues that the greater the dielectric constant the greater is its dissociation power. It is true that those solvents which yield a solution that conduct well have a high dielectric constant, but the molecular conductivity is not proportional to the dielectric constant of the solvent. Crompton calls attention to the connection between the specific inductive capacity and the degree of association of the solvent and aims to show that "if there is any power of forming electrolytes it may be looked for rather in the fact that electrolytes are solutions of approximately monomolecular salts in an associated

solvent than in there being any peculiar 'dissociative power' attached to the solvent." But from the experimental results it appears that all solvents that yield conducting solutions are *not associated* liquids. This parallelism has also been pointed out by Abegg who further observes that nitrobenzene, ethyl nitrate and benzonitrile all have high dielectric constants; yet their association factor is unity.

The dissociation theory, as promulgated for the explanation of the electrical conductivity of aqueous solutions, apparently cannot be applied in its present form to explain the conductivity of non-aqueous solutions. It further appears that the auxiliary theories, which are based upon the specific inductive capacity and the polymerization of the molecules are not sufficient to explain satisfactorily the facts that have been accumulated. Notwithstanding the work that has been done, the data at hand are as yet insufficient for the formulation of a theory by means of which a satisfactory explanation can be given of the phenomenon of electrical conductivity of solutions in general.

Laboratory Notes.

By *F. A. Sieker.*

I. Mercury Stearate and Palmitate.

Mercury oleate is a rather unstable preparation and the more free oleic acid it contains the less stable it is.

The stearate and palmitate are stable salts, but are solids and require dilution with oils or fats if intended for inunction.

The writer prepared a mixture of these salts about 5 years ago as follows:

568 parts of stearic acid, U. S. P. 1890 (which is a mixture of stearic and palmitic acids), was fused in a porcelain dish over a gas flame and 215 parts of yellow mercuric oxide gradually added. Just sufficient heat was applied to keep the mixture in the fused condition until all the mercuric oxide was dissolved. After cooling, the resulting white or almost white mass was reduced to a coarse powder.

The reaction in the case of stearic acid may be expressed as follows:

$$\underbrace{2C_{18}H_{36}O_2}_{568} + \underbrace{HgO}_{215.7} = \underbrace{Hg(C_{18}H_{35}O_2)_2}_{765} + \underbrace{H_2O}_{18.}.$$

As palmitic acid is also a monobasic acid and as its molecular weight differs from the molecular weight of stearic acid by twenty-four, the resulting preparation contains about 26.1 percent of mercury, which is equivalent to about 28.19 percent of mercuric oxide.

Mercury stearate and palmitate when prepared according to directions given above forms a white or almost white granular powder which is permanent and may be heated to fusion over a gas flame without decomposition.

In this state it will bear dilution with white petrolatum or liquid petrolatum, but it is readily decomposed by oleic acid, lard, fatty oils and hydrous lanolin.

About one year ago this subject was taken up again with the object of preparing an ointment with anhydrous lanolin (hydrous having failed as stated above). It is a difficult matter to fuse this stearate and palmitate with anhydrous lanolin and avoid decomposition. If, however, 10 parts of this stearate and palmitate and 10 parts of liquid petrolatum are heated to fusion and then 8 parts of fused anhydrous lanolin added and the mixture stirred while cooling, a smooth light yellow ointment will result.

Such an ointment represents the equivalent of about 10 percent of mercuric oxide.

The sample of this ointment prepared about one year ago does not show the slightest trace of decomposition. Whether or not this ointment can be used with the same results as a 10 p. c. mercuric oleate, must be determined by clinical experience.

II. Collodion.

The U. S. Pharmacopœia gives a formula for preparing collodion, but it gives no description of the finished preparation.

Having had occasion to examine some collodion which was labeled U. S. P., it was necessary first of all to prepare a collodion according to that standard and then determine the specific gravity and the amount of residue it would leave on evaporation. The residue left on the evaporation of the volatile constituents represents the pyroxylin and in the case of commercial collodion any oil or resin that might have been added.

For the purpose of preparing collodion, ether of the sp. gr. 0.7266 at 15° C. and alcohol of the sp. gr. 0.818 at 15° C. were employed. The resulting collodion was a slightly turbid, viscid liquid. The slight turbidity was due to the presence of a trace of insoluble matter derived from the pyroxylin that was employed. The specific gravity of the collodion was found to be 0.7681 at 15° C. All specific gravity determinations were made with a cc. pycnometer.

A small quantity, on spontaneous evaporation, left 3.899 percent of residue and on heating it to 65° C. for a few hours 3.76 percent remained.

Theoretically about 3.86 percent of residue may be expected, that is 30 gms. of pyroxylin are used for 1 liter or about 778 gms. of collodion.

Two commercial samples of collodion were examined with the following results:

No.	Sp. gr.	Percent of residue.
I.	0.8138	5.2
II.	0.7970	4.63

The odor of these samples, especially sample I., suggested that it was deficient in ether. Sample I. did not give a clear flexible collodion when mixed with the requisite amount of Canada turpentine and castor oil. These samples of collodion might have lost ether before they were bottled by the manufacturer, or they were prepared with a deficiency of ether. Whether or not the residue contained something besides pyroxylin was not determined. The consistency of these samples was about the same as that of a U. S. P. collodion, notwithstanding the higher percentage of residue left by the commercial samples.

These samples did not represent the so-called acetone collodion.

Collodion is used as a test for determining carbolic acid in creosote (see U. S. P. 1890, page 101). The writer has applied this test with a mixture consisting of 3 volumes of creosote and 1 volume of liquefied carbolic acid, but no coagulation took place when a collodion prepared according to the U. S. P. was used. Sample of commercial collodion number I. mentioned above was, however, coagulated by this mixture of creosote and carbolic acid. The collodion test seems to be unreliable in determining the presense of carbolic acid in creosote unless it is present in considerable quantity.

Laboratory of Lehn and Fink, New York.

Popular German Names of Domestic Drugs and Medicines.

By *Fr. Hoffmann.*

As people retain their native language and familiar customs and uses, so have the domestic remedies and their traditional popular names been retained by the German population throughout the United States. These remedies are current articles of sale in the drug stores all over the country and with the maintenance of the German language and customs they will remain so from one generation to another, for these names have become fixed in the memory as well as in the formulas and recipes of domestic remedies of every kind, which have been used with confidence and success for centuries. A knowledge of them will therefore always be of value in the business practice of the druggist, and in most of the States of the Union such knowledge will continue to be required and remunerative. Since, however, these names can be remembered by but few, it becomes necessary in seeking for them to resort to older German books or to the more recent compilations of the native names of German medicines. On the other hand every one is not in possession of these works, which, for the requirements of this country, generally are also too comprehensive, contain too much that is unimportant, thus rendering it more difficult for those who are unfamiliar with German names to find those which are current here.

In the year 1888 I, therefore, complied with the requests expressed by many, by the compilation and publication of an alphabetically arranged list of such native names of German domestic remedies and medicines as have been adopted throughout the United States. This list was received with appreciation, and in the form of a small independent publication met with a ready sale. The demand for it still continues, while older compilations as well as the more voluminous recent ones are received with less favor for the above mentioned reasons. On taking into consideration this demand for a more limited list of such names of domestic remedies and medicines, I have subjected those that were previously selected and published to a careful review, and, according to experience and the requirements of our country, a number of names have been omitted and new ones added. This list, revised for a third time, will be found useful and to the purpose, and quite sufficient for all the practical business requirements of our country.

An amplification of this new edition is a supplementary reference to such pharmaceutical preparations whose composition or method of preparation is less generally known, but which are given in the following works: "The National Formulary of unofficinal Preparations," published by the American Pharmaceutical Association; "Arzneibuch für das Deutsche Reich (Pharmacopœa Germanica III)", and "Arzneimittel, welche in dem Arzneibuch für das Deutsche Reich (Pharmacopœa Germanica) nicht enthalten sind," published by the Deutscher Apotheker-Verein, Berlin, 1891. Such formulas which are not contained in the first-named books are given in the reference index.

By means of the works mentioned and this list, those pharmacists and druggists who are less familiar with the German language and the native German names of domestic drugs and medicines, will be able to readily meet the demand for these remedies, and thus to secure and retain trade with German customers.

When in the following list several articles are given under one name, it will be necessary to ascertain the purpose for which the article is to be used in order to know which is desired. The names placed in parenthesis (—) indicate such substitutions as permissable in retail trade. An exclamation mark (!) for potent remedies serves as a warning, that special discrimination should be exercised in dispensing them and in the advice for their proper use. In the selection, dispensing and the use of these native remedies the judgment and professional knowledge of the pharmacist and druggist have to come into play, as in all other business practice, in order to avoid errors and the incorrect selection and use of remedies which often have similar names but are very different in their character and action.

Aalbeere—*Ribes nigrum.*
Aalbesinge—*Fruct. myrtilli.*
Aalfett—(*Ol. jecoris* flav.)
Aalkirsche—*Prunus padus.*
Aalkraut—*Herb. saturejae.*
Aalquappenöl—(*Ol. jecoris flav.*)
Aalquappenpflaster—*Empl. cerussae.*
Aalraupenfett—(*Ol. jecoris flav.*)
Aalraupenwasser—(*Aq. petroselini.*)
Aaron—*Rad. ari.*
A-b-c-Balsam—*Ungt. elemi.*
A-b-c-Salbe—*Ungt. flavum.*
Abbiss, Teufels-—*Rad. morsus diab.*
Abedillendok—*Opodeldoc.*
Abelatspiritus—*Spirit. ammon. aromat., Aq. ammon.*
Aberraute—*Herb. abrotani.*
Abführbeeren—*Fructus rhamn.*
Abführpulver—*Pulv. liquir. comp.*
Abnehmkraut—*Herb.sideriditis, Herb. viol. tricol.*
Abreschen—*Fruct. sorbi.*
Abzehrungskräuter—*Herb.galeopsidis grand.*

Abzug, grüner—*Ungt. popoleum.*
Accidenzienpflaster — *Empl. oxycroceum.*
Achatstein, Achtstein, Ackstein—*Succinum.*
Achelkraut—*Fol. uvae ursi.*
Achelkummup—*Empl. plumbi comp.*
Achiat, Achiot—*Orleana.*
Achillenkraut—*Herb. millefolii.*
Achionsalbe—*Empl. plumbi comp.*
Achtenstaudenblüthen — *Flor. sambuci.*
Achterkummup—*Empl. plumbi comp.*
Ackercichorie—*Herb. taraxaci.*
Ackergauchheil—*Herb. anagallidis.*
Ackergrass—*Rad. graminis.*
Ackerholderbeeren—*Fruct. ebuli.*
Ackerklee—*Herb. trifolii arvensis.*
Ackerkraut—*Herb. agrimoniae.*
Ackerlattigblätter—*Fol. farfarae.*
Ackerleinkraut—*Herb. linariae.*
Ackermannssaft—*Syr. rhamni cathart.*
Ackermannstropfen—*Tinct. calami.*
Ackermannswurzel—*Rad. graminis.*
Ackermennig—*Herb. agrimoniae.*
Ackerschnallen—*Flor. rhoeados.*
Ackerveilchen—*Herb. violae tricolor.*
Ackermannswurz—*Rad. graminis.*
Ackerwurzel—*Rad. calami; Rad. graminis.*
Adam u. Eva—*Rad. victorial. long. et rot.*
Addensalbe—*Ungt. flavum.*
Adebarfett—*Adeps.*
Adermennig—*Herb. agrimoniae.*
Aderntheе—*Herb. centaurii min.*
Aderminzkraut—*Fol. menthae crisp.*
Adersalbe—*Ungt. flavum.*
" durchdringende—*Ungt. rosmarini comp.*
" goldene—*Ungt. flavum.*
Adewurzel—*Rad. althaeae.*
Admiralsalbe—*Ungt. hydrarg. cin. dil.*
Adoposatzenessenz — *Aq. vulnerar. vinos.*
Advagant—*Trajacantha.*
Aegyptenkraut—*Herb. meliloti.*
Aegyptiacum, Aegyptischer Balsam, " Jacob, Aegyptische Salbe } *Oxymel aeruginis.*
Aepfelblüthe, rothe—*Flor. granati.*
" weisse—*Flor. acaciae.*
Aepfelbutter, weisse, Aepfelsalbe, " } *Ungt. rosatum.*
Aepfelsalbe, gelbe—*Ungt. flav.*
Aeschenfett—(*Ol. jecoris flav.*) *Adeps.*
Aetzkalk—*Calcium ustum.*
Aetzstein, blauer—*Cuprum sulf.*
" weisser—*Kali hydr. fus.*; *Zinc. sulfur.*
Aetzsilber—*Argent. nitricum in bac.*
Aetzstift—*Argent. nitricum in bac.*
Affenfett—*Adeps.*
Affolter—*Viscum album.*
Aftersalbe—*Ungt. flav.*, *Ungt. popoleum.*
Aganzwurzel—*Rad. galangae.*
Agarik—*Fungus laracis.*
Agatstein, Agtstein } *Succinum.*
Agtsteinsalbe, harte—*Cerat. citrinum.*
" weiche—*Ungt. flavum.*
Agtsteinöl—*Ol. succini* (gegen Zahnweh: *Kerosot. dil.*)
Agulkenwurzel—*Rad. angelieae.*
Ahlbeeren—*Fruct. ribium nigr.*
Ahlfranken—*Stipit. dulcamarae.*
Ahlfrankenschalen—*Cort. fruct. aurant.*
Ahlrau—*Aloe.*
Ahlwe—*Aloe.*
Ahrand, schwarzer—*Styrax calamitus*
" weisser—*Olibanum.*
Aiglebeeren—*Fruct. myrtilli.*
Akebosade—*Aq. vulnerar. vinos*, oder *Mixt. vulnerar. acid.*
Alan—*Rad. helenii.*
Alantsalbe—*Ungt. flavum.*
Alauge—*Alumen.*
Alberbaumknospen—*Gemmæ populi.*
Album graecum—*Calcaria phospherica*; *Conchae praep.*
Aldemint—*Herb. agrimoniae.*
Aldegan—*Orleana.*

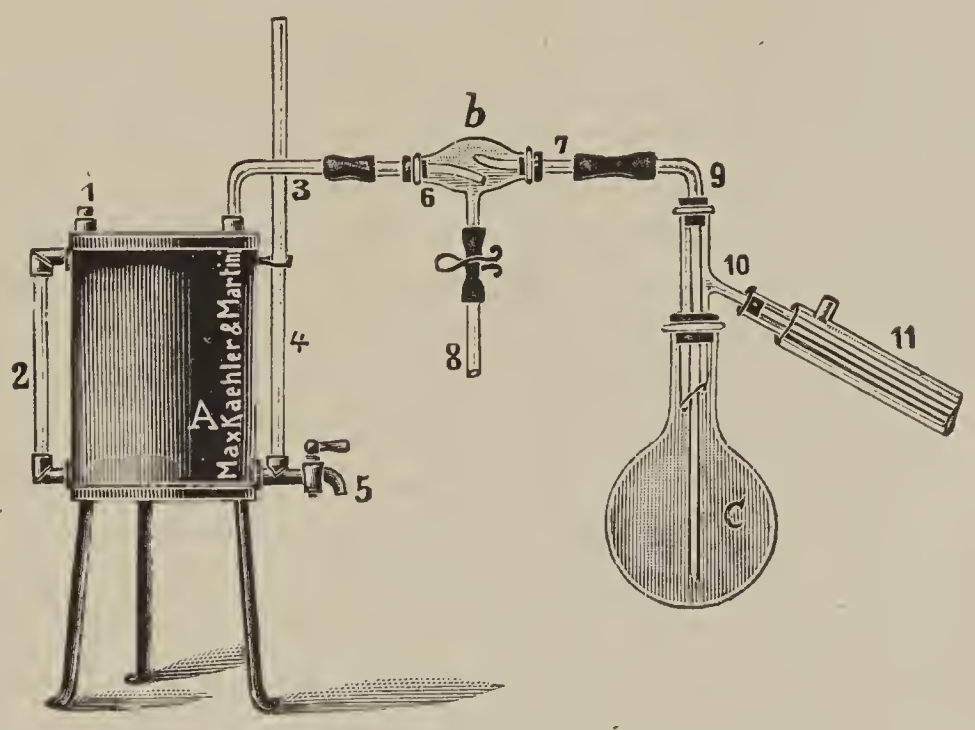
Aletwurzel—*Rad. helenii.*
Alexanderblätter—*Fol. sennae.*
Alfranken—*Stipit. dulcamarae.*
Alfrankenschalen—*Cort. fruct. aurant.*
Alfrude—*Herb. absynthii.*
Alhornbeeren—*Fruct. sambuci.*
Alhornblumen—*Flor. sambuci.*
Alkermes—*Fruct. phytolaccae.*
Alkermessaft—*Sir. coccionellae*, auch *Sir. rhoeados.*
Allerleiblumen—*Flor. rhoeados.*
Alles—*Aloe.*
Allerlei Gewürz—*Fruct. amomi.*
Allermännchenwurzel—*Rad. victorial.*
Allermannsharnisch,
" langer oder männlicher —*Rad. victorialis long.*, runder oder weiblicher —*Rad. victor, rotundae.*
Allermeisterpulver—*Pulv. equor. gris.*
Aller Menschen Aergerniss—*Rad. victorialis long.*
Alleweh—*Aloe.*
Allgemeine Flusstropfen—*Tinct. carminat.*
Allgemeines Heilspflaster — *Empl. fuscum.*
Allirantenwurzel—*Rad. alcannae.*
Allraunwurzel — *Rad. mandragorae* (*Rad. bryoniae*) *Rad. galangae.*
Alluhsalbe—*Ungt. zinci.*
Almanachharnisch—*Rad. victoriallis.*
Almei—*Lapis calaminaris.*
Almensprossen—*Gemmae populi.*
Almerrinde—*Cort. frangulae.*
Almgraupen—*Lich. islandicus.*
Almodi—*Fruct. pimentae.*
Aloesalbe—*Ungt. digestivum.*
Aloestein—*Aloe.*
Alpenkräuterthee, Alpenthee } *Herb. galeopsidis grandiflor., Spec. pectorales.*
Alpranken—*Stipit. dulcamarae.*
Alraun — *Rad. mandragorae* (*Rad. bryoniae.*)
Alrautenöl—(*Ol. jecor. as.*)
Alrunke—Allraun.
Alsam—*Absinthium.*
Alsey—*Herb. absynthii.*
Alskirschenrinde—*Cort. pruni padi.*
Alte Kermes—*Sir. rhoeados.*
Alte Kolonder—*Spirit. odorat.*
Alte Lore—*Ungt. flavum et Ol. laurin.*
Altemoni—*Stibium sulf. nigr.* [*aa.*
Alter Schweden—*Elix. ad long. vit.*
Altepusade, weisse — *Aq. vulnerar. vinos.*
Altepusade, braune — *Mixt. vulner. acid.*
Altheeklappensaft—*Sir. rhoeades.*
Altheekraut—*Herb. althaeae.*
Althee-Loröl — *Ungt. flav. et Ol. laurin. aa.*
Althee-Populeum — *Ungt. flavum et Ungt. populi aa.*
Altheesalbe—*Ungt. flavum.*
Altheewurzel—*Rad. althaeae.*
Altheesalbe—*Ungt. flavum.*
Altschadenpflaster—*Empl. fuscum.*
Altschadensalbe—*Ungt. flavum. Ungt. plumbi.*
Altschadenwasser—*Aq. phagedaenica. Mixt. vulner. acida.*
Alun—*Alumen.*
Alwe—*Aloe.*
Alwise Katherine—*Aloe.*
Amber—*Succinum raspat.*
Amberholz—*Lign. santali alb.*
Amberkraut—*Herb. mari veri.*
Amberöl—*Ol. succini.*
Amberwurzel—*Rad. carlinae.*
Ambrosiakraut — *Herb. chenopodii ambr.*
Ameisengeist—*Spiritus formicar.*
Ameisenöl—(*Ol. lini*) auch *Spir formicar.*
Ameisenpulver—*Pulv. insectorum.*
Amerik. Balsam — *Bals. peruv., Ol. tereb. sulf.*
Amianth—*Alumen plumosum.*
Ammenpulver—*Pulv. magnes. c. rheo.*
Ammonium—*Ammon. carbon.*
Ammoniakgeist—*Aq. ammoniae.*
Ammoniaksalz—*Ammon. carbonic.*
Amomen—*Fruct. amomi.*

MONTHLY REVIEW.

Pharmaceutical Technique.

Apparatus for Distillation with Steam, after Raabe.—The apparatus consists of three parts: *A*, steam generator; *B*, water separator; *C*, distilling flask.

The steam generator is made of sheet copper with extra strong bottom and has an opening 1 for filling, water gauge 2, opening for receiving the distilling tube 3, pressure gauge 4, and stopcock 5 for emptying the apparatus. The difference in height of the water in 4 and in the water gauge 2 gives the pressure in the apparatus.



The tube 3 connects with the water separator *b* by means of the tube 6 which is bent downward at the end. The steam escapes through 7, whereas the condensed water can be drawn off through 8 from time to time. The dry steam is then conducted into the distilling flask *C*. Made by Kaehler & Martini, Berlin.

[Ztschf. f. angew. Chem., 1899, Heft 16.] *Oswald Schreiner.*

Botany and Pharmacognosy.

Protection of Pla ts against Fungi.—Th. Bokorny enumerates the various substances which serve to protect plants against the attacks of fungi and schizomycetes. The most widely distributed of these substances are tannins, but Bokorny states that more than 1 percent of tannin is necessary in order to give the parts of living plants immunity against the attacks of fungi or bacteria. Tea-leaves contain 12 to 15 percent of tannin, oak-bark in the spring from 4 to 20 percent. Bacteria offer less resistance to tannin than mould-fungi. Salts of oxalic acid are not poisonous to the lower fungi, while any free acid is injurious to the growth of all fungi, but oxalic not more so than tartaric or malic acid. Essential oils are said to afford an effective protection against the attacks of all parasitic organisms. This last statement is apparently not in accord with the observation that drugs otherwise rich in oil yield little or no oil after becoming mouldy.

[Pharm. Jour., 63, p. 1; from Biol. Centralblatt, 1899, p. 177.] *E. K.*

A Sugar Bacterium.—H. Marshall Ward and J. Reynolds Green have followed up the observation of the former, which was recorded in the "Annals of Botany" for 1897, that a curious association of organisms had been obtained in Paris, from an excrescence on the sugar-cane, said to have come from Madagascar. It consists of a bacterium associated with at least one yeast, which is probably a variety of *Saccharomyces cerevisiæ*. The organisms grew together in saccharine solutions, producing clumps very like the ginger-beer plant. These clumps induce a powerful fermentation in 14 to 20 percent aqueous solutions of common brown sugar, resulting in the liberation of carbon dioxide and the production of some acid. The saccharine liquid is thus converted into a not unpleasant acid drink, with some resemblance to lemonade or ginger-beer. Experiments show that in the association of organisms there is an agent capable of setting up active fermentation in various saccharine liquids, such as sugar and water or soda-water, beer-wort, milk and sugar or an infusion of vegetable substance, *e. g.*, lemon-pulp. The fermentation results in destruction of the sugar and production of carbon dioxide, and is anaërobic. Plate cultures of the bacterium were obtained as circular, raised, dome-shaped, watery-looking colonies, stiff, like a firm jelly. The behavior of the organism was tried in all the various media known to bacteriologists. A striking fact comes out, on surveying these cultures, viz., that the shizomycete practically refuses to grow in or on any pabulum devoid of sugar. Further, only certain sugars are capable of supplying it with the necessary food. No growth of any temperature could be obtained in normal gelatin-peptone media, or in broth, milk or other animal extracts, *e. g.*, serum-agar, such as is used by the animal pathologists.

[Pharm. Jour., 63, p. 1; from Proc. Roy. Soc., 65, p. 65.] *E. K.*

He ba Monsoniæ ovatæ. — The herb of *Monsonia ovata*, a geranium growing in South Africa. Vernacular name: Nceta or Geita (Hottentot), i-Gquita (Kaffir).

The Monsonia plant has since ages been valued by the aborigines and colonists of South Africa on account of its sedative and astringent properties. A. Smith (A contribution to South African Materia Medica, Cape Town, 1895) used it internally and externally for the treatment of dysentery, chronic diarrhœa, snake bite, anthrax and affections of the respiratory passages. I. Maberley (Lancet 1897 of 6.—13. Febr.) regards Monsonia as one of the most efficient existing remedies for acute and chronic dysentery, whilst it is of little value in ordinary diarrhœa. The drug is even qualified to be looked upon as a specific for dysentery and it is very probable that its action is partly due to a sedative influence upon certain nerve-centers, partly however it may also be based upon special healing properties with respect to dysenteric ulcers.

It is best to use an alcoholic tincture containing 1 part of the drug per 8 parts of rectified spirits. One dose of this tincture for dysentery amounts to 8 to 16 cc. (f. drs. 2—4). It should be administered at intervals of 4 to 6 hours. The treatment may be aided by the simultaneous administration of *Pilulae plumbi cum opio* Ph. Brit (0.25 grm. (grs. 4) per dose).

[Merck's Report for the year 1898, p. 159.] *E. K.*

Rhizoma Aspidii spinulos.—From *Aspidium* (*Polystichum*) *spinulosum*, a polypodiacea growing in northern and middle Europe. Vernacular name: Spinulous fern.

The investigations of E. Poulsson (Arch. f. exper. Pathol. u. Pharmakol. 1895, Vol. 35, p. 97; and 1898, Vol. 41, p. 246) have rendered the rhizome of *Aspidium spinulosum* not only chemically and physiologically interesting owing to its richness in filicinoid substances, but probably it may be available for therapeutical purposes. Poulsson succeeded in extracting from this drug 5 characteristic bodies, viz. polystychine $C_{22}H_{24}C_9$, polystichalbine $C_{22}H_{26}O_9$, polystichinine $C_{18}H_{22}O_8$, polystichocitrine $C_{15}H_{22}O_9$, and polystichoflavine, which is probably symbolized by the formula $C_{24}H_{30}O_{11}$. All these bodies are insoluble in water, they dissolve more or less freely in ether, benzene, chloroform and acetone, but are freely soluble in hot methyl and ethyl alcohols. The pharmacological properties of these bodies are almost identical with those of filicine. Laurén (Finska Läkeresellkapets Förhandlingar 1897) demonstrated also that the ethereal extract of *Aspidium spinulosum* is very active and a practically useful anthelmintic. This writer who himself suffered from tape-worm, took 4.0 grm. (grs. 64) of the extract on an empty stomach and after the lapse of 2 hours took a purgative and 1½ hours later was liberated from a *Botriocephalus latus* 26 feet in length together with its head. Similarly satisfactory results were obtained in five other cases by means of 3.0 to 4.0 grm. (grs. 48—64) of the extract, and only in the case of a female patient harbouring a *Taenia mediocanellata*, probably owing to insufficient dosing, the extract brought about the expulsion of many proglottides, but the head remained within.

Merck & Co. have recently undertaken to prepare and commercially supply the ethereal extract of *Aspidium spinulosum*.

[Merck's Report for the year 1898, p. 160.] *E. K.*

Rhizoma Calagualae.—From *Polypodium Calaguala* Ruiz (*Polypodium sporadolepis*), a polypodiacea growing in Peru. Vernacular name: Calaguala (vera).

"Calaguala" is the commercial name of various drugs belonging to the class of *Polypodiaceae*, e. g. in Mexico *Polypodium aureum*, in Brazil *Polypodium adiantiforme*, in Chili *Goniophlebium synammia*. The most active of these drugs is the true Peruvian Calaguala, which enjoys the indigenous reputation of being an excellent resolvent and diaphoretic remedy and

which is used for chronic affections of the respiratory passages as well as for whooping cough in the form of decoctions (2.0—4.0 per 100.0) (grs. 32—64 per f. oz. 3½) or powders 2.0—4.0 grm. (grs. 32—64) per day. The decoction is also used externally as a wound dressing and is said to serve the same purpose as arnica. (See Nueva Farmacopoea Mexicana, Mexico 1896, p. 36, Dragendorff, Die Heilpflanzen p. 57, Planchon-Collin, Les drogues simples p. 46 and A. Murillo, Plantes médicinales du Chili 1889, p. 223).

[Merck's Report for the year 1899, p. 161.] *E. K.*

Coloring Matters of Dyer's Broom and Heather.—A. G. Perkin and F. G. Newbury find that *Genista tinctoria* contains two coloring matters, the first identical with the luteolin of weld (*Reseda luteola*), and the second, a new coloring matter, genistein. The latter has a composition corresponding to the formula $C_{14}H_{10}O_5$, colorless needles, and yields an acetyl derivative, $C_{14}H_7O_5(C_2H_3O)_3$, m. p. 197—201°, and a tetrabromo-compound, $C_{14}H_6Br_4O_5$, colorless needles melting above 290°. On decomposition with alkali, it gives phloroglucinol and an acid of the formula $C_8H_8O_3$, m. p. 147—149°; this, with fused alkali, forms parahydroxybenzoic acid, and appears to be parahydroxyphenylacetic acid. Genistein dimethylether, colorless leaflets, m. p. 137—139°, is insoluble in alkaline solutions, but forms a monacetyl derivative of the formula $C_{14}H_7O_3(OCH_3)_2.Ac$, fine needles, m. p. 202—204°. A second product of the methylation, formed in minute quantity, melts at 187—189°, and appears to be isomeric with the above ether. In dyeing property, genistein closely resembles apigenin and vitexin, and to it the constitution of a trihydroxyphenylketocumaran,

$$(OH)_2.C_6H_2<\overset{O.}{CO}>CH.C_6H_4(OH),$$

has been provisionally assigned. The coloring matter of heather, *Calluna vulgaris*, is quercetin, and there is also present a catechol-tannin in small quantity.

[Pharm. Journ., 63 p. 25; from Proc. Chem. Soc., 15, p. 179.] *E. K.*

Coloring Matters of Cotton Flowers and Kamala.—A. G. Perkin also finds that the flowers of the cotton plant, *Gossypium herbaceum*, contain as glucoside a new coloring matter, gossypetin, $C_{16}H_{12}O_8$, soluble in alkalies with an orange-red color, becoming green on oxidation. The hexacetyl compound, $C_{16}H_6O_8Ac_6$, colorless needles, m. p. 212—216°; the sulphate, $C_{16}H_{12}O_8,H_2SO_4$, the hydriodide, $C_{16}H_{12}O_8,HI$, orange-red needles, and the monopotassium salt, $C_{16}H_{11}O_8,K$, a crystalline powder, have been prepared. Gossypetin contains no methoxyl groups, and on fusion with alkali yields phloroglucinol and protocatechuic acid. It is probably a member of the flavone group of coloring matters. Gossypetin is similar to, but not identical with, thujetin, which is present in *Thuja occidentalis*. In a note on rottlerine, the same investigator states that the decomposition products of rott-

lerine, $C_{33}H_{30}O_9$, a coloring matter of kamala, *Mallotus phillipinensis*, previously described (P. J. [3], 24, 159; Trans. Chem. Soc., 67, 230), are: with fused alkali acetic and benzoic acids, and with nitric acid o- and p-nitrocinnamic acids. It is now found that fused alkali at 220—240° yields also phloroglucinol.

[Pharm. Journ., 63, p. 25; from Proc. Chem. Soc , 15, p. 161.] *E. K*

Oleo-resin of Dacryodes Hexandra.—According to A. Moore the oleo-resin of *Dacryodes hexandra* consists of essential oil, a resin and a white crystalline substance, $C_{25}H_{44}O$, which melts at 166—167°. The essential oil contains lævorotatory pinene and lævorotatory sylvestrene, which is the optical isomer of the sylvestrene described by Atterberg. The crystalline substance is insoluble in water, and only sparingly soluble in strong alcohol. By the action of acetic anhydride, it yields a crystalline mono-acetate, m. p. 200°, and it therefore appears to be an alcohol. It is unaffected by potash and by all ordinary reagents. A tetranitro-derivative is produced by the action of fuming nitric acid. Chromic acid in acetic acid solution, while oxidising it, appears to cause two molecules to combine; the product is a feeble acid, the molecular weight of which was determined by the cryoscopic method. The substance is probably identical with Personne's ilicic alcohol (m. p. 175°), with which it agrees in composition.

[Pharm. Jour., 63, p. 1; from Proc. Chem. Soc., 15, p. 150.] *E. K.*

Nataloin and Homonataloin.—In the course of his researches on aloins, A. Leger finds that besides nataloin, Natal aloes contains another aloin, homonataloin, which differs from the former in having a CH_2 group less. The aloes were first treated with acetone to remove the resins; the insoluble residue, consisting mainly of aloins, was dissolved and crystallised from methyl alcohol. By fractional crystallization from this solvent while boiling the homonataloin was obtained in crystalline crusts, while the more soluble nataloin separated in pale yellow scales. Both aloins were anhydrous. To nataloin the author attributes the formula $C_{16}H_{18}O_7$, and homonataloin he represents as $C_{15}H_{16}O_7$. The following reactions, which are common to both these aloins, distinguish them from barbaloin. A little manganese dioxide or potassium dichromate, added to a sulphuric acid solution of the aloins, develops a bright green color. A fragment of ammonium persulphate added to a solution of the aloin in caustic soda slowly develops a violet color, which dyes silk, but is not fixed by cotton.

[Pharm. Journ., 63, p. 45; from Comp. rend., 128, p. 1401.] *E. K.*

Preparation of Capaloin.—Stoeder gives the following method for the preparation of aloin from Cape aloes: Dissolve 10 grams of Cape aloes in 500 cc. distilled water containing 2 percent sulphuric acid, and filter into 500 cc. water. After twenty-four hours the pale solution, which is free from

resin and gives no emodin reaction, is evaporated in a vacuum to about 120 cc. and set aside in a cool place. In about a week crystals begin to form, but not before three months can any considerable quantity be collected. By crystallising from alcohol he obtained the aloin in yellow needles grouped together in rosette shape. The yield was 3.8 percent, and an analysis of the pure product gave the formula $C_{48}H_{53}O_{23}3H_2O$, or very near to that of Tilden for socaloin, i. e., $C_{16}H_{17}O_7$. The pure crystallised aloin melted at 119°—121° C., dissolved 1 in 116 of water and 1 in 1.672 of water-free ether. The aloin gives a yellow reaction with nitric acid and Curaçao aloin a red. Klungesch's reaction gave, with Cape aloin, a reddish-violet coloration. The author points out that this is contrary to Tschirch's opinion, and he therefore adds that he obtained the reaction by treating the Cape aloes with water, diluting the solution with water until it was straw-color, then adding a few drops of copper-sulphate solution, when a canary-yellow color is produced, which, on the addition of dilute hydrocyanic acid, changes to cherry-red. The reaction carried out in this way can be used to distinguish aloes from frangula, senna and rhubarb.

[C. & D., 55, p. 37; from Nederl. Tijdschr. v. Pharm.] *E. K.*

Glucosides of Ivy.—Houdas finds that there are several glucosides in ivy, one of which, hederin, $C_{64}H_{104}O_{19}$, he describes in detail. It crystallizes from alcohol (90 percent) in fine long radiating needles, which lose 6.2 per-cent of their weight on prolonged exposure to 130° C. and melt at 248° C. It is insoluble in water and in chloroform, and very sparingly soluble in ether. It is soluble in alcohol and in acetone, the alcoholic solution is dextro-rotatory. When boiled with dilute sulphuric acid for 12 hours, it is converted into hederidin—$C_{26}H_{40}O_4$, and two sugars—hederose, $C_6H_{12}O_6$, and rhamnose, $C_6H_{12}O_5$. Hederidin crystallises from boiling alcohol in brilliant rhomboidal crystals, which are insoluble in water, ether, benzene and chloroform. It melts at 324° C. and sublimes at a higher temperature without decomposing. The sugar, hederose, crystallises from alcohol in radiating needles before the rhamnose separates out. It melts at 155° C.; its solutions are strongly dextrogyrate. The rhamnose is obtained after the hederose has crystallised out, in oblique rhomboidal prisms, which melt at 93° C., and is slightly dextrogyrate.

[Pharm. Journ., 63, p. 45; from Comp. rend., 128, p. 1463.] *E. K.*

Drug-Assaying.

The Standardization of Vegetable Drugs.—Burt E. Nelson discusses the alkaloidal standards and methods of assay to be incorporated into the pharmacopeia of 1900. He gives the results of an extended series of examinations and the standards adopted by him as representing average

content of good samples of drug. Below are his results, method of assay used and standard adopted:

Powdered Opium. Four samples, assayed by the U. S. P. process, were found to contain 14.24, 14.67, 12.72 and 14.11 p. c. of morphine. Standard: 15 p. c.

Red Cinchona. Two samples, assayed by U. S. P. process, contained respectively, 4.740 and 3.857 p. c. of total alkaloids. Standard: 5 p. c. total alkaloids.

Nux vomica. Assayed by U. S. P. process there was found: 1) 1.234, 2) 1.892, 3) 1.132, 4) 1.505 and 5) 2.518. Standard: 1.5 p. c. total alkaloids.

Aconite. This was assayed by Wright's modification of Dequesnel's, method, using however ammonia instead of sodium carbonate. Samples one and two were titrated with decinormal acid and calculated to aconitine. Squibb's physiological test was tried with all and is considered most reliable. Result of assay: 1).321 p. c., physiological test 1—600; 2) 0.2043 p. c., physiological test 1–200; 3) 1.285 p. c., physiological test 1–700; 4) 0.183 p. c., physiological test 1–80; 5) 0.477 p. c., physiological test 1–700. Standard: 0.500 p. c. alkaloid, physiological test 1–600.

Hyosciamus. Assayed by Dunstan and Ransom's process, titrating with decinormal alkali and calculating to $C_{17}H_{23}NO_3$, was found to contain: 0.1085, 0.1274, 0.070, 0.052 and 0.242 p. c. Standard: 0.150 p. c. total alkaloids.

Belladonna leaves, assayed by process used for henbane, contained: 0.236, 0.144, 0.382, 0.471. Standard: 0.35 p. c. total alkaloid.

Kola, assayed by extracting with chloroform, evaporating to dryness, taking up with hot water, filtering, again shaking out with chloroform and drying to constant weight, contained: 1) 2.250. 2) 2.29, 3) 1.254 p. c. Standard: 2 p. c. caffeine.

Stramonium leaves, assayed by the process used for henbane, contained: 1) 0.422, 2) 0.517 p. c., 3) 0.281 p. c. Standard 0.375 p. c. total alkaloid calculated as $C_{17}H_{23}NO_3$.

Coca leaves, by Lyon's assay process, titrating with acid, and calculating to $C_{17}H_{21}NO_4$, assayed: 1) 0.415, 2) 0.424, 3) 0.727, 4) 0.480. Standard: 0.5 p. c.

Sanguinaria was assayed by extracting with alcohol, evaporating, taking up with dilute acid, filtering and shaking out alkaloid with ether; the residue from the ethereal solution being titrated with acid. The yield was: 1) 0.918 and 2) 0.911 p. c. Standard: 1 p. c. of total alkaloid.

Gelsemium, assayed by Lyon's method and weighed as crude alkaloid, yielded: 1) 0.77 and 2) 0.416 p. c. Standard: 0.35 p. c. total alkaloid.

Guarana was assayed by Squibb's process and contained: 1) 1.365 and 2) 1.314 p. c. Standard: 3 p. c. of caffeine.

Hydrastis, by Lyon's process, titrating with acid, assayed 1) 1.726 and 2) 1.314 p. c. Standard: 2 p. c. of hydrastine.

It is proposed to have the preparations of drugs of definite alkaloidal strength and to use in their preparation a relatively larger or smaller quantity of drug, as indicated by assay.

[Drug. Circ., 43, p. 173.] *W. A. P.*

The Assay of Belladonna Leaves. — Frank X. Moerk offers some improvements upon his assay method *, chief among which is the adoption of a menstruum consisting of alcohol (95 p. c.) 90 parts and ammonia water (10 p. c.) 10 parts by weight, this having been found to exhaust the drug more readily than that before used. Data offered shows that slightly higher results were obtained by the improved method which is given in detail.

While in his first paper he called attention to the fallacy of the Keller method of assay, Moerk now writes that the solvent used in this process being homogeneous and perfectly miscible with water, the possibility was suggested of using an aliquot portion of a maceration to complete the assay, thus saving additional time. One of the most important objections to assay processes in which an aliquot portion is used to represent a definite weight of drug is the increase in weight of the solvent added, by the moisture and soluble matters taken up from the drug. In the assay process offered moisture and extractive are determined and the results, corrected accordingly, agree well with the results obtained with the more lengthy total extraction process. [Am. J. Pharm., 71, p. 320.] *W. A. P.*

Johore Ipecacuanha.—J. C. Umney and R. S. Swinton report to the British Pharmaceutical Conference an examination of a quantity of ipecac from Johore (Straits Settlements), apparently derived from *Psychotria Ipecacuanha*, the species that yields the Rio or Brazilian root. Following Paul and Cownley's process the proportion of total alkaloid was found to be 1.7 p. c., consisting of emetine 1.24 p. c., cephaeline 0.39 p. c., and of a third unknown alkaloid (Paul and Cownley's?) 0.07 p. c. They conclude that the drug, being as good as Rio ipecac, may be used for official purposes.

[Chemist & Drug., 55, p. 203.] *W. A. P.*

Assay of Preparations containing Pilocarpine and the Characters of Pilocarpine nitrate and H drochloride. H. A. D. Jowett remarks that, while we can determine the amount of total alkaloid with fair accuracy, this is of little value since it gives no indications as to the amount of pilocarpine contained therein and that, while the salts of pilocarpine are largely used in medicine, the characters of these salts as given in the pharmacopœias are very unsatisfactory and hardly serve to identify the alkaloid, much less

* Am. J. Pharm., 1899, vol. 71, p. 105; Pharm. Review, 1899, vol. 17, p. 267.

determine its purity. After discussing the characters of the salts as given by the various authorities he communicates a method for determining the amount of pilocarpine in the total alkaloid obtained by assay, then proves the identity of pilocarpine from different sources and finally gives the tests and characters of pilocarpine nitrate and hydrochloride. Jowett's method of assay consists in isolating the alkaloids by any approved method, dissolving the alkaloids in a saturated alcoholic solution of pilocarpine nitrate, and adding to this nitric acid to acidity, whereupon the freshly-formed pilocarpine nitrate crystallizes out, and is weighed as such. This method of crystallization from alcohol, in which the nitrate is but feebly soluble, is also used for purifying the alkaloid.

[Chem. & Drug., 55, p. 203.] *W. A. P.*

The Alkaloidal Strength of Commercial Samples of the Official Preparations of Jaborandi.—E. H. Farr and R. Wright report the assay of twelve tinctures and twelve liquid extracts of jaborandi obtained from various sources. The results show that the commercial preparations are exceedingly variable in strength, the tinctures varying from 0.012 to 0.84 p. c. with an average of 0.026 p. c. of total alkaloid, the liquid extract from 0.030 to 0.24 p. c. with an average of 0.150 p. c. of total alkaloid. The condition is attributed largely to the difficulty, if not impossibility, of obtaining true jaborandi leaves, those in the market being variable and usually not the official kind. [Chem. & Drug., 55, p. 205.] *W. A. P.*

Assay of the Official Liquid Extract, Wine, and Vinegar of Ipecacuanha. E. H. Farr and R. Wright, in a paper to the British Pharmaceutical Conference, corroborated Wilson's observations that the B. P. method of assay does not yield accurate results, besides being very tedious. But even the method of Wilson yields an alkaloidal residue containing matter which is not alkaloid. Their method of assay is carried out as follows: Five cc. of the fluid extract are placed in a small porcelain dish, 10 drops of dilute sulphuric acid with 5 cc. of water added and the mixture evaporated on a waterbath until reduced to about 3 cc. This is run into a separator, an excess of ammonia added, well shaken and allowed to stand until the chloroform has separated. This is drawn off and the liquid extracted with two further portions of chloroform, 5 cc. each. From the united chloroformic extract the alkaloid is abstracted with three successive portions of 10 cc. of 1 p. c. sulphuric acid. From the acid-alkaloidal solution the alkaloids are finally recovered by repeating the treatment with ammonia and chloroform. The chloroform solution of the alkaloids is then evaporated in a tared dish over a waterbath until all chloroform is removed and the weight taken. The alkaloid is titrated in the usual way, the ccs. of decinormal acid multiplied by the factor 0.024, based upon the mean molecular

weights of emetine and cephaeline, indicate the amount of alkaloid in 5 cc. of fluid extract.

Data offered demonstrate that this method gives higher results than either the B. P. or Wilson's method and that a nearly pure alkaloidal residue is obtained.

When assaying the wine or vinegar 50 cc. are acidified, evaporated to 5 cc. und the assay finished as before.

[Chem. & Drug. 55, p. 201.] *W. A. P.*

The Assay of Ipecacuanha Preparations. — W. A. H. Naylor and J. J. Bryant also submitted a paper on the assay of ipecac to the British Pharmaceutical Conference in which they confirm the statement that the B. P. process entails loss and that Wilson's method is an improvement on it. After experimenting with a number of methods they adopt one having for its chief recommendation the speed with which it is carried out, its distinctive feature being the removal of the resinous substance before the extraction of the alkaloid, thereby making possible the quick separation of the chloroformic extractions. According to this method 10 cc. of the liquid extract are placed in a basin over a warm water-bath until the alcohol is dissipated. The solution is transferred to a 50 cc. flask, and the basin washed with small portions at a time of a mixture of 2 cc. of dilute sulphuric acid in 30 cc. of water. The solution is filtered and water passed through the filter until the volume is 50 cc., of which 25 cc., representing 5 cc. of liquid extract, are transferred to a separator and shaken with two successive 10 cc. of chloroform and the chloroform washings rejected. The aqueous solution is now made alkaline with ammonia and extracted with three successive 10 cc. of chloroform, the chloroform extracts evaporated to dryness, weighed and titrated with decinormal acid.

For the assay of the wine, 100 cc. are evaporated to 10 cc., a little kieselguhr stirred in, the mixture transferred to a beaker, and the basin washed with a mixture of 2 cc. of dilute sulphuric acid and 20 cc. of water. The solution is then filtered into a 50 cc. flask and water added through the filter to measure 50 cc. Of this filtrate 25 cc., representing 50 cc. of wine, are taken and the assay completed as directed for the fluid extract.

[Chemist & Drug., 55, p. 202.] *W. A. P.*

Practical Pharmacy.

Miscible Liquid Extract of Ipecacuanha.—F. C. J. Bird is of the opinion that the B.P. liquid extract of ipecacuanha is a great improvement on the dried acetic extract, formerly official, as it possesses the advantages of standard strength, good keeping properties, and the fine aroma of the root is retained. Precipitation occurs, however, on diluting the extract with weak alcoholic or aqueous liquids, and the author suggests that, by adding

an equal bulk of water to the extract, and allowing the mixture to stand in a cool place for twenty-four hours, a perfectly miscible liquid may be obtained after filtering and adding a little acetic acid. The filtrate is distilled until of a certain alcoholic percentage (determined by specific gravity), the distillate retained, and the residue further distilled to remove alcohol, then allowed to cool and the clear liquid decanted and added to the reserved distillate. The finished product gives a bright mixture with detannated wine, yields from 2.0 to 2.5 p. c. of alkaloid by the B. P. assay process, and compares favorably as regards aroma with the official liquid extract. Bird also contributes "Laboratory Notes" on *Liq. ferri perchl.*, and on detannated wine. [Pharm. Jour., 63, p. 88.] *W. O. R.*

An Examination of some Commercial Pharmaceuticals.—D. L. Davoll, Jr. reports upon the purity of pharmaceutical substances, some of which had been submitted to the author for opinion as to genuineness, while others had been collected by his students from sources of supply for the general public, including department stores, groceries etc.

Syrup of ferrous iodide. Three samples contained 9.35, 9.28 and 9.20 p. c. of ferrous iodide.

Cochineal. A sample which looked suspicious contained 68 p. c. of barium sulphate.

Spirits of nitrous ether. Of the seven samples examined none even approached the pharmacopoeial strength. Three were devoid of nitrite, the remaining four contained, 2.60, 2.45, 2.03 and 1.90 p. c. of ethyl nitrite.

Magnesia. One specimen conformed to all requirements of the U. S. P. Two did not, loosing on ignition, respectively, 19.07 and 20.32 p. c.

Tincture of iodine, eight samples, are reported in percent of what they should be, i. e. 7 gm. per 100 cc. is equivalent to 100 p. c. strong,: 49.71, 60.5, 91, 46, 86, 46, 75 and 74.57.

Honey. Two samples from pharmacists were pure while a third, from a grocer, was practically all glucose.

Alcoholic extract of belladonna leaves. Two commercial samples in unbroken packages, purporting to be of a certain assayed strength and from the same firm assayed respectively, 2.2 and 2.95. p. c.

Olive oil. Five samples were examined, of these four are pronounced to be cottonseed oil while the fifth consists of about equal parts of cottonseed oil and green olive oil. [Western Druggist, 21, p. 318.] *W. A. P.*

The Assay of Belladonna Plasters, B. P. 1898.—H. J. Henderson gives the details of a process for assaying belladonna plasters prepared in accordance with the B. P. formula. The plaster is allowed to disintegrate with ether and the mixture is then shaken with acetic acid. Sulphuric acid is next added to the separated acid liquor, the lead sulphate allowed to

subside, and the belladonna extract separated from the other constituents of the plaster. The alkaloids are then shaken out with ammonia and chloroform, next taken up with hydrochloric acid, and finally obtained in crystalline form and weighed. Control experiments were made with Dunstan and Ransom's periodide method, indicating the method sufficiently accurate.

[Pharm. Jour., 63, p. 110.] *W. O. R.*

Syrup of Balsam of Tolu.—E. H. Farr and R. Wright object to the new B. P. process for preparing syrup of tolu because of the loss of volatile matter in using boiling water, and the subsequent separation of crystalline matter. The difficulties are obviated by dissolving the balsam in alcohol, add water 70° C., shake, and set aside for 24 hours; then filter bright and mix with simple syrup at once or set aside until desired for use. The U. S. P. formula was also tried and found to yield a preparation inferior to that of the above process.

[Pharm. Jour., 63, p. 107.] *W. O. R.*

Hydrogen Peroxide.—C. T. Tyrer experimented with hydrogen peroxide in order to determine the rate of decomposition and value of preservatives. Of the latter, phosphoric acid, glycerine, boroglyceride, alcohol, sulphuric acid and hydrochloric acid (1 p. c. each) were tried. Their efficiency being in the order named, the first being the best. Regarding containers during transit the following were used, champagne quarts, soda water, beer bottles with patent screw stoppers, stone bottles with screw stoppers, corbyn quarts and carboys, the last being the most liable to break. Various precautions for storing and filling containers are also mentioned.

[Pharm. Jour., 63, p. 100.] *W. O. R.*

The Composition of Commercial Araroba.—E. Douzard analyzed a number of samples of commercial araroba and concludes that the requirement of the B. P. for chrysarobin (hot chloroform extraction) 50 p. c., is too low and allows of too much adulteration (28 p. c.). The average composition of dry commercial araroba is chrysarobin 70—85 p. c. and ash 0.3—3.0 p. c. The minimum percentage of chrysarobin should be raised to 65 p. c. [Pharm. Jour., 63, p. 106.] *W. O. R.*

Liquor Bismuthi et Ammonii Citratis.—F. R. Dudderidge recommends returning to the older formulæ for the above preparation, containing an excess of the alkaline bicarbonate, as they yield more stable preparations. The finished product otherwise is very similar to that of the new formula. A slight change is made in the assay process rendering it more easy to carry out. The order of mixing the solution to which nitric acid, but no water has been added, and the potassium salts (increased by one-third) is reversed from that of the B. P. The former being added to the latter.

[Pharm. Jour., 68, p. 101.] *W. O. R.*

The S rength of Capsules of Blaud's Pills of Commerce.—The question as to iron percentage in capsules of Blaud's pills according to size is frequently lost sight of. The smaller ones are not necessarily insoluble. Commercial samples of capsules varied greatly as to ferrous iron content found by C. E. Stuart. Assays were made by weighing the capsule, cutting under ether, expressing the capsule, weighing the empty capsule. Then dilute sulphuric acid (dilute phosphoric acid if capsules contained sugar) was added to the ether and mass, the latter disintegrating and dissolving. Titration was made with standard potassium dichromate solution.

[Pharm. Jour., 63, p. 108.] *W. O. R.*

Analytical Notes on the B. P. Lozenges.—F. Davis examined six samples each of a number of lozenges of the B. P. With the exception of the lozenges of sulphur and sodium bicarbonate, all showed conformity to the B. P. requirements. The two exceptions varied considerably from the standard, indicating no uniformity in preparation. Examinations were made for only active ingredients, and not bases.

[Pharm. Jour., 63, p. 99.] *W. O. R.*

The Macla an Tes .—In reference to the statement by Fr. Günther that a salt of pure cocaine does not answer to the Maclagan test, and that the formation of a crystalline precipitate in that test is due to the presence of another base melting at 111° C., Messrs. Boehringer and Son point out that it amounts to saying that all cocaine which answers the test is impure and contains the other base to which Günther refers. They have, therefore, endeavored in various ways to obtain evidence of the existence of that base in a large quantity of coca leaves operated upon especially for that purpose. One portion of the crude base obtained was treated so as to ascertain the presence of an ethyl alcohol residue, with a negative result. Another portion was converted into hydrochloride by partial neutralisation and re-crystallized in fractions, as directed by Günther, while the mother liquors of cocaine hydrochloride were also subjected to the same treatment. The only instance in which any evidence was obtained of a base having a higher melting point than cocaine was in the mother liquor of cocaine hydrochloride which yielded a very small quantity of base, melting at 104° to 106° C. Examination of the mother liquors obtained in the synthetic preparation of cocaine and of ordinary commercial cocaine salts, as well as chemically pure cocaine prepared from benzoylecgonine and pure methyl alcohol, gave similar results. No base melting at 111° C. could be obtained, and the extremely small quantity (0.00006 percent) of the base melting at 104° to 106° C. was quite insufficient to account for the crystalline precipitate in Maclagan's test, for in place of obtaining 20 kilo. in ten weeks, Messrs. Boehringer estimate that they would not obtain a kilo. in the course of a year, and

they, therefore, conclude that the objections made to the Maclagan test are quite destitute of foundation.

[Pharm. Journ., 63, p. 25; from Ph. Centrh., 40, p. 393.] *E. K.*

Valuation of Reduced Iron.—E. S. Peck has compared the valuation of reduced iron according to the iodine method *, the method of the B. P. and that of the U. S. P. At first it seemed impossible to obtain concordant results with the iodine method, when, however, the amount of water was reduced the reaction between iodine and iron was immediate and complete and duplicate results agreed well. As modified, the method reads: 0.27 to 1.25 gm. of finely powdered reduced iron is heated in a 100 cc. glass-stoppered flask with 0.5–1 cc. of water and 2–2.5 gm. pure, powdered, dry iodine gradually added from a weighing tube. When the reaction is complete, any iodine adhering to the neck of the flack is washed down with water, 1 gm. of potassium iodide is added, and after the iodine is all dissolved the liquid is diluted to exactly 100 cc. It is then shaken, allowed to settle and the excess of iodine in 50 cc. of the clear liquid determined by means of sodium thiosulphate. After deducting the total excess of iodine from the quantity originally taken, the difference represents the amount of iodine used up in the formation of ferrous iodide, from which the percentage of metallic iron in the sample is calculated. The table given below shows that the results by this method agree well with those yielded by the U. S. P. mercuric chloride method, while the copper sulphate method of the B. P. gives results in excess of the truth.

Sample.		B. P. method.	U. S. P. method.	Iodine method.
P	4	83.42	81.19	82.01
	5	83.91	81.63	81.24
	6	84.52	81.52	82.09
Q	4	53.73	38.45	39.03
	5	52.58	38.45	30.03
	6	52.88	38.90	40.98

[Chem. & Drug., 55, p. 214.] *W. A. P.*

Notes on Terebene.—Lewis Ough has attempted to ascertain to what extent commercial specimens of terebene correspond with the B. P. requirements for that article and, as a result, he finds that it is most varied in its composition, only one sample out of twelve being in strict accordance with those requirements. The solubility of the samples in 90 percent alcohol varied from 4.75 to 6 percent, the solubility in pure ether (s. g. 0.720) from 1 in 10 to 1 in 20, and the solubility in methylated ether (0.717) from 1 in 1.4 to 1 in 2.5. The optical rotation also varied greatly in the different samples. [Pharm. Journ., 63, p. 104.] *E K.*

* E. Schmidt, Yearbook of Pharmacy, 1898.

Almond and other Kernel Oils.—J. C. Umney and R. S. Swinton are of opinion that the B. P. test for almond oil is not defined with sufficient accuracy, but that inability to comply with its requirements indicates admixture with apricot kernel oil. Certain marked differences are also shown when the test is applied to apricot and peach kernel oils.

[Pharm. Journ., 63, p. 106.] *E. K.*

Examination of the Terpeneless Oils of Lemon and Orange in the Market.—T. H. W. Irdis has examined the terpeneless oils of lemon and orange on the market, and records the results, which show great difference in the value of the respective products. Users of terpeneless oils are warned to exercise caution in purchasing so-called "terpeneless" and "concentrated" lemon oils offered at absurd prices.

Thirteen commercial samples of terpeneless lemon oil were obtained through ordinary business sources, and the following results were obtained from them:—

No.	Sp. gravity at 15.5°	Rotation 100 mm. tube.	Absorbed by Na HSO_3	Not absorbed.	Solubility in 70 percent alcohol.	Solubility in 90 percent alcohol.
			P. c.	P. c.		
1	.8956	— 7°12′	67	33	1 in 9	In all proportions.
2	.8963	— 7°21′	42	58	1 in 20	" "
3	.8712	+41°21′	8	92	Very insoluble.	1 in 4
4	.8966	—11° 5′	6	94	" "	" "
5	.8943	— 1°41′	76	24	1 in 3	In all proportions.
6	.8836	+10°58′	30	70	Very insoluble.	1 in 3
7	.9036	— 6°20′	51	49	1 in 2	In all proportions.
8	.8698	+42° 6′	15	85	Very insoluble.	Very insoluble.
9	.8707	+38°21′	14	86	" "	" "
10	.8966	+ 2° 8′	70	30	1 in 40	Soluble in all proportions.
11	.8925	— 7°15′	61	39	1 in 15	" " "
12	.8956	0°	66	34	1 in 6	" " "
13	.8955	0°	67	33	1 in 7	" " "

[Pharm. Journ., 63, p. 103.] *E. K.*

Pharmacology and Therapeutics.

Delphinium Staphisagria.—E. M. Holmes directs attention to the fact that the true *Delphinium staphisagria* is practically unknown in botanic gardens in this country, and that the plant which passes under that name is in reality another species—viz., *Delphinium pictum*, Willd. The two species are distinguished as follows:—*D. staphisagria* has very hairy stems, glandular hairs being mixed with the long spreading soft hairs, flowers that when well developed have an ultramarine-blue tint, and a calyx with a very short or almost obsolete spur, and carpels containing only four or five large seeds. *D. pictum*, Willd, has shorter soft hairs, but no glandular

hairs on the stems, and the flowers are of a pale lilac colour, the spur is as long as the calyx segments, and there are in each carpel ten or twelve seeds, which are only half the size of those of *Delphinium staphisagria*, Linn. The author accounts for the absence of the true plant in botanic gardens partly by the fact that it is only half-hardy in Britain, requiring the protection of a greenhouse in winter, whilst *D. pictum* is hardy, and partly by the reason of illustrations of the plant in several works on medicinal plants being incorrect. Even the illustration in Bentley and Trimen's 'Medicinal Plants,' quoted in the British Pharmacopœia, is unreliable, the drawing having evidently been made from a fresh specimen of *D. pictum* supplemented by details of stem and leaf from dried museum specimens of the true *D. staphisagria*, and being therefore a composite and worthless illustration.

[Pharm. Journ., 63, p, 93.] *E. K.*

The Assay of Preparations Containing Pilocarpine and the Characters of Pilocarpine Nitrate and Hydrochloride.—H. A. D. Jowett deals with the assay of preparations containing pilocarpine and the characters of salts of that base. Having extracted the mixture of amorphous bases from jaborandi or its preparations, he dissolves them in a small quantity of a saturated alcoholic solution of pilocarpine nitrate, adds some strong alcoholic solution of nitric acid, and then sets the mixture aside to crystallise. The crystals which form are filtered off, drained by the filter pump, washed with more saturated alcoholic solution of pilocarpine nitrate, dried and weighed. The percentage of bases in the total alkaloid yielding crystalline nitrate can then be calculated. In most cases the total alkaloid may be assumed to be assumed to be pilocarpine, but if a very accurate determination be required, the melting point and specific rotation of the nitrates should be determined. With regard to the characters of the pilocarpine salts, the author thinks that the nitrate should consist of permanent white crystals, soluble in 6 or 7 parts of water and 146 parts of 95 per cent. alcohol, fairly soluble in boiling alcohol but almost insoluble in ether or chloroform. When heated in a capillary tube the salt should melt at 176° to 178°, and its specific rotatory power in aqueous solution should be +81° to +83°. No residue should be left on ignition, and there should be no precipitate on adding ammonia, water, or sodium or potassium hydroxide to a concentrated aqueous solution. The hydrochloride should form deliquescent crystals, soluble in less than their own weight of water and in 10 parts of absolute alcohol, but almost insoluble in ether or chloroform. The dried salt should melt at 200° to 204°, and its specific rotatory power should be +90° to +92°. No residue should be yielded on ignition, and a concentrated aqueous solution should give no precipitate with ammonia water, and only a few oily drops, which quickly redissolve, on the addition of sodium or potassium hydroxide.

[Pharm. Journ., 63, p. 91.] *E. K.*

Antitoxic Sera: Antistreptococcic Serum.—All efforts made to produce an antistreptococcic serum possessing absolute curative powers in any form of disease caused by streptococci have remained as unsuccessful as they were two years ago (see Merck's Report. 1896, p. 136). This fact has its explanation in the great variability of the toxic power of the streptococci. Reference should be made to the comprehensive papers of L. Cobbett (Lancet 1898, p. 986) and I. Desse (La sérotherapie antistreptococcique Etude experimentale et critique, Thèse de Lyon 1897), as well as to the investigations of H. van de Velde (Arch. de Médicine experim. 1897, Vol. 9). In spite of these unfavorable results antistreptococcic serum is employed by many physicians and has indeed proved very efficient in many cases. The antistreptococcic serum of the Bacteriological Institute of the Société chimique des Usines du Rhone, prepared by Marmorek's method, is obtained from horses which are immunized with respect to streptococci by means of highly toxic cultures. In order to maintain the preparation in an efficient condition it should be kept in a cool and dark place and left in the same packing in which it was originally supplied.

The application of the serum is indicated in the treatment of erysipelas, puerperal fever, medical and surgical septicaemia, cellulitis, anginae, bronchio-pneumonia etc. as well as in certain other diseases due to mixed infections of streptococcus and the specific germs, e. g. diphtheria, scarlet, influenza, typhoid and tuberculosis. The serum should be applied as soon as possible after diagnosing both medically and bacteriologically. The injections should be made under the skin of the thigh which should at this point be previously cleansed with a 1 pro mille solution of sublimate. After the injection the point of incision should be covered with iodoform collodium and a pad of cotton. It is always advisable, irrespective of the patient's age, to inject 20 cc. (f. drs. 5½) at once and to carefully watch the temperature. 24 hours after the first injection 10 cc. (f. drs. 2½) should be injected and the injections should be continued in this manner until the temperature is permanently reduced and the general condition of the patient shows an improvement.

Pulmones.—The organic treatment with the aid of pulmonary juice as prepared after Brunet's method has been reported upon on the occasion of the 4th French Congress for internal medicine by X. Arnozan, E. Cassaet and F. Brunet (Presse médicale 1898, No. 36). According to their communication the treatment is unsuccessful in pure tuberculosis, but the remedy acts as a general tonic in suppurations within the thorax, the focus of which opens outwards or into the bronchi, also in arthropathia after Marie's typhoid. When treating influenza, broncho-pneumonia, bronchitis and pneumonia, the pulmonary juice can only be used as an adjuvant in the ordinary treatment. For general information on this subject see Merck's Report 1897, p. 109.

Renes.—The subcutaneous injection of glyceric or aqueous renal extracts (see Merck's Reports 1896, p. 119, and 1897, p. 110) appears to be scarcely calculated to secure for these preparations a permanent place among recognized remedies, since recent investigations of A. Mosi (La Clinica med. ital. 1898, Febr.) have shown them to be ineffective in small doses, whilst in large doses they are apt to cause harm. From the experiments of Concetti (Corriere sanitar. 1898, No. 16) it appears nevertheless that certain advantages may be derived from the internal administration of larger doses of powdered renal substance in the treatment of nephritis in children.

Testes siccati pulv.—The prostate gland being called upon to furnish the sperma in conjunction with other glands, the testicles etc., it follows that when the testes fail to work in consequence of senile atrophy, the duty devolves upon the prostate to supply the substances required by the genital centre in sufficient quantities; this organ is, therefore, called upon to perform an increased amount of work and to pass into a phase of functional hypertrophy. Guided by these considerations A. Friedländer (Deutsche med. Wochenschr. 1898, No. 51, Ver. Beil. No. 38, p. 288) has administered the testicular substance in hypertrophy of the prostata, and in three cases secured such remarkable successes as to suggest the desirability of further tests. The quantity administered by him amounted to 0.6 grm. (grs. 8) per day. The remedy was given in the form of tablets.

Extractum Materiae keratogenae.—An extract prepared from the rudiments of the horns of calves by means of physiological salt solution.

The action of the extract of fresh horny tissue is described by Lalande (Nouv. remèdes 1898, No. 8, p. 169), who has used it for two years with great success in the treatment of syphilis. The cases treated were primary, secondary and tertiary and were represented by all ages. One third of these cases had already been treated mercurially, two thirds had not yet undergone treatment. 1 to 3 cc. (m. 16—48) of the preparation were injected subcutaneously into the lumbar region and the injections were repeated at intervals of 1, 2 or 8 days. The injections are at first painful for a few minutes, but the sensation of pain disappears at the third injection almost entirely. Unpleasant accessory symptoms of any consequence are not observable. The improvement appears generally after the third injection. Eruptions and lesions of the skin and the mucous membranes disappear, ulcerated syphilides dry up, the scabs become detached and disclose the formation of a smooth soft scar. The local treatment is limited to ablutions with boiled water or boric acid solution, and if necessary, to cauterization with nitrate of silver of the highly hypertrophised plaques. 10 injections to 30 at the outside are necessary to produce complete and permanent recovery, as far as can be judged at present.

[Merck's Report on the year 1898, p. 109.] *E. K.*

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* For Nos. 1 and 2 see p. 179. † See p. 389.

University of Wisconsin—Bulletins of the Agricultural Experiment Station. *

No. 75. Testing cows at the farm. By E. H. Farrington. Pp. 30.

No. 76. Noxious weeds of Wisconsin. By E. S. Goff. Pp. 53.

Iowa Agricultural College—Ames. Bulletins of the Experiment Station.

No. 40. The relation of acid fermentation to butter and aroma. By C. H. Echles. Pp. 12.

No. 41. Some reports from trial stations on new orchard fruits and shrubs. By J. S. Budd. Pp. 66.

No. 42. Horse nettle as a troublesome weed in Iowa. Two other troublesome weeds. Potato scab. By S. H. Pammel. Pp. 12.

Author—Philadelphia. Chemico legal testimony. Strychnine. By G. H. Meeker. Pamphlet, pp. 16. Reprinted from the Phila. Monthly Med. Journ.

Reviews.

Lexikon der gesamten Technik und ihrer Hilfswissenschaften. Im Verein mit vielen Fachgenossen herausgegeben von Otto Lueger. Siebenter Band: Reibung, innere bis Zwischentransport. Ein Bd., pp. 1031, mit zahlreichen Abbildungen.

Instead of eight hundred pages, as contracted for by the subscriber, the seventh volume with over a thousand pages concludes this technical encyclopedia without additional cost. For the past five years, the Review has from time to time called attention to the contents of individual volumes or numbers as they made their appearance. Though we at times had occasion to find fault with some of the details of the contents, yet on the whole the various reviews spoke in high praise of the work at large.

Five years may seem a long time if, after having received the first part of the letter A, the subscriber desires information on a subject beginning with Z. From the standpoint of book-making, however, the period seems short for the publication of a large seven-volume work, even though more than a hundred writers contributed to its make-up.

* These bulletins are sent free to all residents of Wisconsin upon request.

The work is primarily written for all classes of persons engaged in technical pursuits. To them it is to be what one of the larger general encyclopedias is to the general reader. The technical character is possibly most strongly emphasized in those articles pertaining to engineering in which mathematics plays an important role. Each article being a unit and written by a specialist, the work may be regarded as a compendium on a large scale both for study and review.

To pharmacists this work ought to appeal fully as much as to others engaged in arts based on applied science. The pharmaceutical manufacturer ought to find in it a storehouse of information on the various phases of engineering which present themselves for solution. This is naturally equally true of the chemical manufacturer.

The pharmaceutical student will often find the monographs on drugs, chemicals, etc., with their references to original literature just the thing he is in need of. Not only the college student, but the professor and even trustee will find the work valuable for information on construction, building material, heating and ventilation, laboratories and libraries and the numerous other subjects on which light is necessary in the construction, maintenance and repair of a modern college building.

The pharmaceutical practitioner who is something more than a mere irresponsible vender of drugs, and especially he who by virtue of his education and training takes an interest in the public welfare of the community in which he lives, will find in it a storehouse of useful and practical information. Water supply, sewage, purification of sewage, the construction of sanitary school buildings, of libraries and a thousand other subjects of modern import, he will find discussed and illustrated. Like a good general encyclopedia, this work should find a place in every well equipped library. Persons who order the complete work should order it bound in the original binding covers, which are as durable as they are artistic and unique.

E. K.

Aus meinem Leben. Erinnerungen und Rückblicke von Carl Vogt. Ein Bd., pp. vi, 202. Verlag von Erwin Naegele, Stuttgart, 1896. Broch. M. 4.50, eleg. geb. M. 5.50.

Few pharmacists, even those of the fatherland, may have known of Carl Vogt and his scientific work. He was born in Giessen, July 5, 1817. For political reasons he fled to Switzerland, where in

1839 he was associated with Agassiz and Desor. In 1848 he was professor in Giessen and for a short time occupied important political positions in his native country. Being liberal in his political views he lost his position at Giessen. In 1852 we again find him in Switzerland, this time as professor of geology, later of zoology. Besides several text books and monographs he has written the "Physiologische Briefe", "Zoologische Briefe", "Köhlerglaube und Wissenschaft" etc.

The work before us, however, is neither physiological nor zoological, its contents are biographical and historical and both biography and history are of the most interesting kind. Both style and contents are of such a nature that it seems a hardship to have to lay the book aside before it is completely read.

If any one is anxious for a vivid description of the life at a small German university during the thirties together with that of the Gymnasium and the social and political atmosphere of a small city, let him read Vogt's "Erinnerungen." The "characters" were so numerous that according to the author's statement ten Dickens might have written themselves tired.

These memoirs, however, are of special interest to the chemist and pharmacist, for it was at Giessen where the first scientific university laboratory was established, the chemical laboratory of Liebig. Histories of chemistry call attention to the difficulties with which Liebig had to contend in carrying out his educational ideas, but in order to fully appreciate them one must read Vogt's description of university life at Giessen. The pages devoted to this great master and to his relation with his university colleagues touch upon one of the most important periods of chemical history.

A description of Liebig and his relation to his students, as described by Vogt, will be found in the supplement of vol. 14, pp. 26 & 33 of this journal. The characterization of his assistant Ettling, a former pharmacist may not be out of place. "Für die Erwerbung aller manuellen Geschicklichkeiten sorgte Ettling, der Assistent, musterhaft. Er war schon in reiferen Jahren, früher Apotheker gewesen und hatte aus diesem Gewerbe eine fast peinlich pedantische Genauigkeit mitgebracht, die im grössten Gegensatze zu dem knochigen, stets vorwärts springenden Liebig stand. Ein scharfer Verstand war mit einer Ruhe, Gelassenheit und Geduld gepaart, wie ich seither selten getroffen habe. Trotz der so verschiedenen Charaktere gingen die beiden vortrefflich zusatmmen; Liebig überliess die Anfänger ganz der

Direktion Ettlings und wenn er zuweilen in ihre Arbeiten mit hastender Unruhe eingriff, so nahm Ettling eine Geduldspriese und klagte vielleicht später: 'Der Professor verdirbt mir meine Laboranten.'

"Ettlings Unterricht begann mit einer gründlichen Anleitung, ein Korkmesser recht scharf zu schleifen; dann wurde mit dem Schneiden und Bohren der Korke fortgefahren, um schliesslich zu dem Biegen und Blasen des Glases vor dem Lötrohre überzugehen. Das Glasblasen war, neben der Guitarre, die er meisterhaft spielte, Ettlings Liebhaberei und Stärke; alle jene eleganten Apparate, welche unter dem Namen des Liebig'schen Kaliapparates bekannt sind, waren aus seinen kunstreichen Händen hervorgegangen. Wenn diese vorbereitenden Studien in zwei oder drei Nachmittagen beendet waren, so führte Ettling den Anfänger vor ein Repositorium, auf welchem eine mit den Buchstaben des Alphabets bezeichnete Reihe von Glasflaschen stand, gab ihm Rose's Anleitung zur qualitativen Analyse in die Hand und sagte: 'So nun nehmen Sie aus dem ff etwa so viel in ein Glas. Hier ist Ihr Platz, da finden Sie alles, was nöthig ist zum Arbeiten und im Rose können Sie lesen, was Sie zu thun haben. Morgen sagen Sie mir dann, was im Glase ist!'"

How many students in analytical chemistry would a modern college of pharmacy have if its instructors were to give such meagre directions? Yet at the end of the semester Vogt knew something about qualitative analysis.

Among the descriptions of the various places which were visited by Vogt with his brothers and sisters during vacation the following paragraph occurs which possesses a pharmaceutical flavor and which may serve as an illustration of Vogt's style of description: "Dauernheim war uns von allen Ferienaufenthalten der liebste; aber Gladenbach hatte auch seine Vorzüge. Es war dort das Getriebe einer kleinen Landstadt; Sitz eines Landgerichtes, Steuerkommissariates und eines Forstamtes — also etwa ein Dutzend Beamte nebst Aerzten, Apotheker und sonstigem Zubehör. Die Honoratioren versammelten sich Morg ns bei dem Apotheker zu einem 'vorzüglichen Schnäpschen' in einer Hinterstube, die mit lithographirten und schrecklich kolorirten Krähwinkeliaden geschmückt war. 'Wie der Admiral von Krähwinkel mit seinen Getreuen in die See sticht'—'Wie der Landstand von Krähwinkel eine Rede voll Feuer hält' etc. Auf dem ersten Tableau sah man den Admiral mit einer Hellebarde in das Wasser st.chen; auf dem zweiten zeigte sich der Landstand in rednerischer Stellung

mit einem brennenden Blatt Papier in der Hand. Dort wurde Stadt- und Staatsklatsch verhandelt; das grosse Wort in Kriegshändeln führte Dr. Zinsser, ein früherer Militärchirurg, ein Freund meines Vaters, der alljährlich nach Giessen kam, um dort das Doktorexamen zu machen, dann bei uns logirte, aber doch dreimal durchfiel, bevor es ihm gelang, endlich durchzudringen."

These two extracts may suffice to give the reader an idea of style and content of the "Erinnerungen". Mention is also made of Perroz at Strassburg, of Brunner at Geneva, of Loewig who later became professor of chemistry at Breslau, also of students who worked in Liebig's laboratory during Vogt's time.

The book is one of the best of that class which busy pharmacists ought to read for profitable recreation. In these days, in which pharmacy is leading an unenviable existence between the upper and the lower millstone, biographical and historical literature of this kind seems almost a necessity. German reading pharmacists will feel more than repaid for the small expense if they will take the time to read Vogt's "Erinnerungen und Rückblicke", in the writing of which the author was unfortunately interrupted for ever.

LEHRBUCH DER ORGANISCHEN CHEMIE für Studierende an Universitäten und technischen Hochschulen von Dr. A. F. Holleman—Groningen. Autorisierte deutsche Ausgabe von Dr. Hans Hoff. Ein Bd., pp. VIII, 452. Verlag von Veit & Comp. 1899. M. 10.

The writer has had occasion repeatedly to call attention to the fact that the enormous multiplication of new compounds together with certain generalizations have so absorbed the chemist's mind that he has found little or no time for one of the most important generalizations, viz. the systematic classification of this bewildering material. It is not to be questioned that many chemists have the situation well in hand, but this unquestionable fact is not demonstrated in the chemical treatises, even the most modern. Even some of our best text books are little more than a "Beilstein" on a small scale.

The author of the book before us has realized this and has tried to remedy this evil. We can but congratulate him on his reform in so far as he recognized the evil. Unfortunately one of the most striking evils did not appeal to him. The first part of his intro-

duction leads one to expect much—and we do not want to convey the idea that the body of the book is not in harmony with the author's introduction—but the second part of this same introduction leads one to fear that one of the principal generalizations is to be treated stepmotherly in this as well as in all textbooks that have come to the attention of the writer.

Unfortunately this foreboding proves true upon looking over the body of this otherwise excellent textbook. It is not only important to draw conclusions from physical and chemical properties as to the structure of the compound or of classes of compounds; it is fully as important if not more so to apply the same kind of reasoning to the classification of all. Why this halfheartedness exists so largely among chemists it is difficult to understand. It seems strange that one and the same person will call attention to the conservatism and timidity—we might almost say narrowness of mind—of his predecessors during the second quarter of this century, and yet shrink back when he is brought face to face with a similar problem of to-day. The truth is that we mostly lack that philosophic spirit which Woehler displayed not only when he synthesized urea; but also when, in his advanced age, while working with silicon derivations he wrote to Liebig that if we lived in the sun our bodies would be made up of silicon in place of carbon. It seems so difficult to take a broader view of things than under the limited conditions that prevail on our laboratory tables. This, with the lack of courage to step aside from the wellbeaten path—which prevented even the genial Victor Meyer from carrying out to their logical conclusion his well-expressed principles of classification—seem to be responsible for the present rut. What we need is another Kekulé even if he, like the late chemical philosopher, never completed his "Lehrbuch".

The above critique should be considered general rather than applying specifically to the work before us. The fact, however, is that the greater the excellencies of a book are, the more its author attempts to make chemical students rather than parrots, the more does the writer regret that the old classification of carbon compounds which is as absurd today as it was excellent when Kekulé wrote his "Lehrbuch" should still prevail. The more excellent a text book in other respects, the more essential it is that this important factor be emphasized. The book before us is deserving of the closest inspection by every teacher of organic chemistry. *E. K.*

SUPPLEMENT.

Universities and Colleges.

Something like authoritative information respecting the higher education of women in Germany is furnished by an address, delivered by special invitation at the recent National Social Congress in Kiel by Dr. Kate Windscheid of Leipzig, the first woman graduate of Heidelberg and a leader in the propaganda. Among other things, she drew attention to the fact that, in the development of the higher education of women, Switzerland made the beginning, while in Germany Leipzig and Göttingen early opened their lecture-rooms to women as guests. The greatest need at present is the establishment of more girl's gymnasia. Four of the great states that compose the German federation, namely, Prussia, Bavaria, Saxony, and Württemberg, now permit women to apply for the *Abiturienten* examination, i. e., the test admitting to the universities. At twenty of the universities of the fatherland women are permitted to attend lectures as "hearers". During the winter semester of 1897-98 there were 365 women in attendance at these institutions, and in the winter semester of 1898–99 in Prussia alone there were 414. The desire that these women be admitted to the full rights of students is being fulfilled first by Giessen, in accordance with a Senate resolution passed in January of the current year. Four of the German universities give the doctor's degree to women candidates. Admission to the medical examination is a matter of greatest importance, without which female physicians have no official standing. Women who have been in attendance at the universities are now engaged in two callings, namely, the medical and that of teaching. The women physicians in Germany number ten, five of whom are in Berlin. The higher education of women in Germany has come to stay. One important obstacle is yet to be overcome, namely, the fear of the "emancipated women." Dr. Windscheid, after replying to the current objections to the admission of women to the professional callings, closed with the statement that the modern woman can bid farewell to the nineteenth century with the full conviction that the dawning century will open up to her new and still greater spheres of usefulness.

Scientific Societies.

Award of the Hanbury Medal.— The tenth Hanbury Medal is, we are informed, to be presented to Albert Ladenburg, Ph. D., Hon. M. D., formerly Professor of Chemistry and Director of Chemical laboratories in the University of Kiel and now of Breslau. It will be remembered that the Hanbury Memorial Fund was raised to establish a memorial to the late Daniel Hanbury and that it has since been customary to award a gold medal biennially for high excellence in the prosecution or promotion of original investigations in the chemistry and natural history of drugs — Daniel Hanbury's especial subjects of study. The adjudicators are the Presidents for the time being of the Linnean, Chemical and Pharmaceutical Societies, the President of the

British Pharmaceutical Conference, and a pharmaceutical chemist nominated by the last-named two Presidents. On the present occasion, therefore, the adjudicators are Dr. Günther, Dr. T. E. Thorpe, Mr. William Martindale, Mr. J. C. C. Payne, and Mr. Francis Ransom, and they have unanimously decided, that Professor Ladenburg is the most fitting person to receive the medal to be awarded this year. He has specially devoted himself, as a chemist, to the synthesis of organic bodies, and has studied more particularly the constitution and synthesis of alkaloids —atropine, homatropine, and coniine being among the more important of the numerous substances which he has succeeded in forming synthetically. His first paper on a scientific subject was published in 1868, and the Royal Society's Catalogue of scientific papers includes a list of seventy-seven records of investigations conducted by him independently, in addition to numerous others published in conjunction with other investigators. It is usual to present the medal formally at the inaugural sessional meeting of the Pharmaceutical Society in October, and it is expected that Professor Ladenburg will be in England to receive the medal in person on October 2 next. Former recipients of the medal have been Friedrich August Flückiger (1881), John Eliot Howard (1883), Georg Dragendorff (1885), William Dymock (1887), Gustave Planchon (1889), Julius Oswald Hesse (1791), Johann Michael Maisch (1893), August E. Vogl (1895), and John Elishee De Vrij (1897).

British Pharmaceutical Conference.

E. H. Farr and R. Wright:—Assay of the Official Liquid Extract, Wine, and Vinegar of Ipecacuanha, p. 411.

W. A. H. Naylor and John J. Bryant:—Ipecacuanha, p. 412.

John C. Umney und Ralph S. Swinton:—Johore Ipecacuanha, p. 410.

H. A. D. Jowett:—Assay of Perparations Containing Pilocarpine and the Characters of Pilocarpine Nitrate and Hydrochloride, p. 410.

E. H. Farr and R. Wright:—The Alkaloidal Strength of Commercial Samples of the Official Preparations of Jaborandi, p. 411.

R. H. Parker:—Estimation of Diabetic Glucose.

C. E. Stuart:—The Strength of Capsules of Blaud's Pill of Commerce, p. 415.

David Hooper:—Three Natural Rubber-substitutes.

E. J. Parry:—Oil of Cardamons.

Louis Ough:—Notes on Terebene, p. 416.

E. W. Lucas:—A New Condenser.

Frank R. Dudderidge:—Liquor Bismuthi et Ammonii Citratis, p. 414.

E. H. Farr and R. Wright:—Syrup of Balsam of Tolu, p. 414.

Charles T. Tyrer:—Notes on Hydrogen Peroxide, p. 414.

E. Saville Peck:—Further Note on Ferrum Redactum, P. B. 1898.

H. J. Henderson:—Assay of Belladonna-plasters, B. P. 1898, p. 413.

W. Elborne:—Commercial Carbon Disulphide.

C. S. Dyer:—The Liberation of CO from Bicarbonate of Sodium by Heat.

Edwin Dowzard:—The Composition of Commercial Araroba, p. 414.

E. Saville Peck:—A Weight-burette.

E. M. Holmes:—Delphinium Staphisagria, L.

Frederick Davis:—Analytical Notes on the B. P. Lozenges, p. 415.

T. H. William Idris:—Commercial Terpeneless Oils of Lemon and Orange, p. 417.

G. Claridge Druce:—Salient Features of the Flora of Devonshire.

John C. Umney and Ralph S. Swinton:—Almond and other Kernel Oils, p. 417.

Thomas Tyrer and Albert Levy:—Determination of Correct Melting-points.

F. C. J. Bird:—Laboratory Notes.

Bibliography.

The very interesting and neatly gotten up pamphlet on "Apotheken-Einrichtungen der Vergangenheit und Gegenwart" for which Dr. Hermann Peters, author of "Aus pharmaceutischer Vorzeit in Wort und Bild", has supplied the text, contains an appendix of mottos and sentiments collected by the author which are mentioned as suitable for the decoration of apothecary shops. Those collected from Shakspeare will appeal particularly to the English speaking peoples. In the collection they are given in German translation only. The originals with the German translation are here reproduced. They are all taken from friar Lawrence's monologue, act 2, scene 3, of Romeo and Juliet.

"O, mickle is the powerful grace that lies
In herbs, plants, stones, and their true qualities."

* * *

"Gar grosse Kräfte sind's, weiss man sie recht zu pflegen,
Die Pflanzen, Kräuter, Stein' in ihrem Innern hegen."

* * *

"Es liegt ein grosser Schatz von Segensgaben
Im Kraut versteckt und im Gestein vergraben."

* * *

"And, where the worser is predominant,
Full soon the canker death eats up that plant."

* * *

"Gar bald vom Todeswurm zerfressen siegt
Das Kraut, in welchem Arges überwiegt."

Commercial.

The Cultivation of Colocynth (*Citrullus colocynthis*) is likely to become an important industry in several of the villages of Cyprus. The fruit is collected from June to August, and is spread in the sun, being stirred two or three times a day that it may dry uniformly and quickly, after which it is peeled by the women of the villages, who are trained to the work. For this purpose the dried fruit is sprayed the previous day with a little water. A woman can peel about 500 fruits within a day, and is paid 3½ to 4½ c. p. and her food. Peeling is a delicate work and requires great care in order that the naturally friable fruit may not be broken and rubbed, otherwise its value is lowered. The colocynth of Morphon and Papho is considered to be of a higher quality than from some other parts of the island. The dried, peeled, and sound fruits form the first quality, and are called "apples." They are sold to the merchants, who export this product, at 12 to 20 c. p. per oke, whilst the broken and somewhat badly peeled pieces of fruit, which are called "psicha," represent the inferior quality, and are purchased by the merchants at 6 to 10 c. p. per oke.

The Production of Essential Oils in Cyprus is receiving attention at the hands of the Director of Agriculture, Mr. P. Gennadius. Cyprus formerly was famous for its perfumes, the preparation of which, according to tradition, was introduced in the island by Venus, the goddess of beauty, and Mr. Gennadius is hopeful that its fame for perfumes may be restored. That the ancient fame of perfume-making in Cyprus is justified, he thinks, is shown not only by the fact that the Cypriotes were very rich and much advanced, but also

by the fact that the flora of the country is rich in aromatic plants. In addition to the native aromatic plants which abound in Cyprus, the following are very common and grow almost without any special treatment:—Violet, jasmine, citrus trees, *Pelargonium odoratissimum*, Damascus rose, lavender and rosemary plants, the essential oils of which form in other places one of the principal reasons of their propagation and cultivation. Taking the foregoing facts into account, Mr. Gennadius hopes that the development, in certain villages at least, of the perfume industry will be of advantage. With this object in view, last year he prepared samples of essential oils which were sent to England and submitted to various wholesale houses for examination as to their quality and value, the reports on which are published in a recent report on agriculture in Cyprus. Judging by the total results of his effort, Mr. Gennadius is of opinion that there are in the island all the elements to found an important and prolific industry.

Strophanthus Kombe. — The difficulty of obtaining pure seed of *Strophanthus kombe*, agreeing with the description and color test given in the British Pharmacopœia, has long been known. (See Pharm. Journal [3], 23, pp. 868, 927.) The seeds entering commerce have sometimes come from East Africa, sometimes from the west of that Continent, and in either case have frequently consisted of a mixture of the seeds of different species; or, if pure, of the non-official species. This, indeed, was so much the case that even some of the seeds supplied to Professor T. R. Fraser for his experiments consisted of mixed seed, similar in appearance, but some giving the red and others the green reaction with sulphuric acid. The original *S. kombe*, Oliver, is a native of East Africa. and has never to the knowledge of Mr. Holmes been found on the West Coast, therefore, any *Strophanthus* seed imported from the West Coast is not in the least degree likely to be the genuine drug. For the last ten years Mr. E. M. Holmes, Curator of the Museums of the Pharmaceutical Society, has been endeavoring to obtain the flowers and fruits, together with the leaves, of the genuine *Strophanthus kombe*, and in the course of his inquiries he has learned that what he formerly suspected is true, viz., that the best *Kombe* seed obtainable in commerce has hitherto consisted of the seeds of at least two, and probably three, species mixed, the seeds from different districts being bulked together. Through the kindness of Mr. F. M. Moir, of the African Lakes Corporation, Limited, 45 Renfrew Street, Glasgow, and Professor G. F. Scott-Elliot (corresponding member of the Society and well known as an African traveller) he has been able to obtain specimens of the plants from which the seeds are stated to be obtained. These consist of *S. emini*, *S. kombe* and *S. courmonti*. The seeds have also been received separately in pods, not mixed as in commerce. Of these, he has pointed out to Mr. F. M. Moir the variety that complies with the British Pharmacopœia tests, and asked him, if possible, to secure its being sent into commerce in pods and with some distinguishing mark —such as a definite brand, that would enable chemists to obtain a uniform seed agreeing with the official tests in the Pharmacopœia, since there is little doubt that the somewhat uncertain action of the tincture met with in commerce is largely due to the unequal character and different kinds of the seeds that arrive in commerce. In reply, he states:—

"We have written fully to our friends in Africa on the subject, and are asking them to ship only the genuine quality, and under the mark 'Mandala Brand.' All packages of this genuine *Strophanthus* will be marked A. L. C. L. 'Mandala Brand,' London, and the seed will be sent in pods."

As it is obviously impossible to test separately every seed in a mixture of seeds and thus separate them, whilst it is comparatively easy to test one seed out of each pod, the plan of sending the seed in pods will render it now possible to get a pure and uniform drug. [Pharm. Jour.]

Pharmaceutical Review.

VOLUME 17. **OCTOBER, 1899.** NUMBER 10.

Editorial.

The 28th annual meeting of the **German Apothecaries Society** was held at Danzig, August 22 and 23. The problems discussed at the annual meetings are primarily of a commercial or professional nature. The National Association of Retail Druggists which since last year occupies a similar position in this country might well learn, if it would, a lesson or two with regard to organization and the manner of securing a representative expression of opinion from this older association.

If, however, any Americans have ever thought that our domestic troubles could be settled by a system of concessions, they might soon have their minds disabused of such an economic 19th century monstrosity if they would but read the proceedings of the German Apothecaries Society for the past few years.

Science and education are represented, by way of courtesy, in the form of lectures, or in so far as they may directly affect the commercial or professional relations of the apothecary. The lecture this year was delivered by Professor Thoms of the University at Berlin. After a general survey, he emphasized the necessity of a broader as well as deeper pharmaceutical education and called attention to the fact that the request made last year, that the "Archiv der Pharmacie" be dropped, was but a result of the insufficient education of the average German apothecary who could no longer appreciate the best work done by the scientific representatives of his calling.

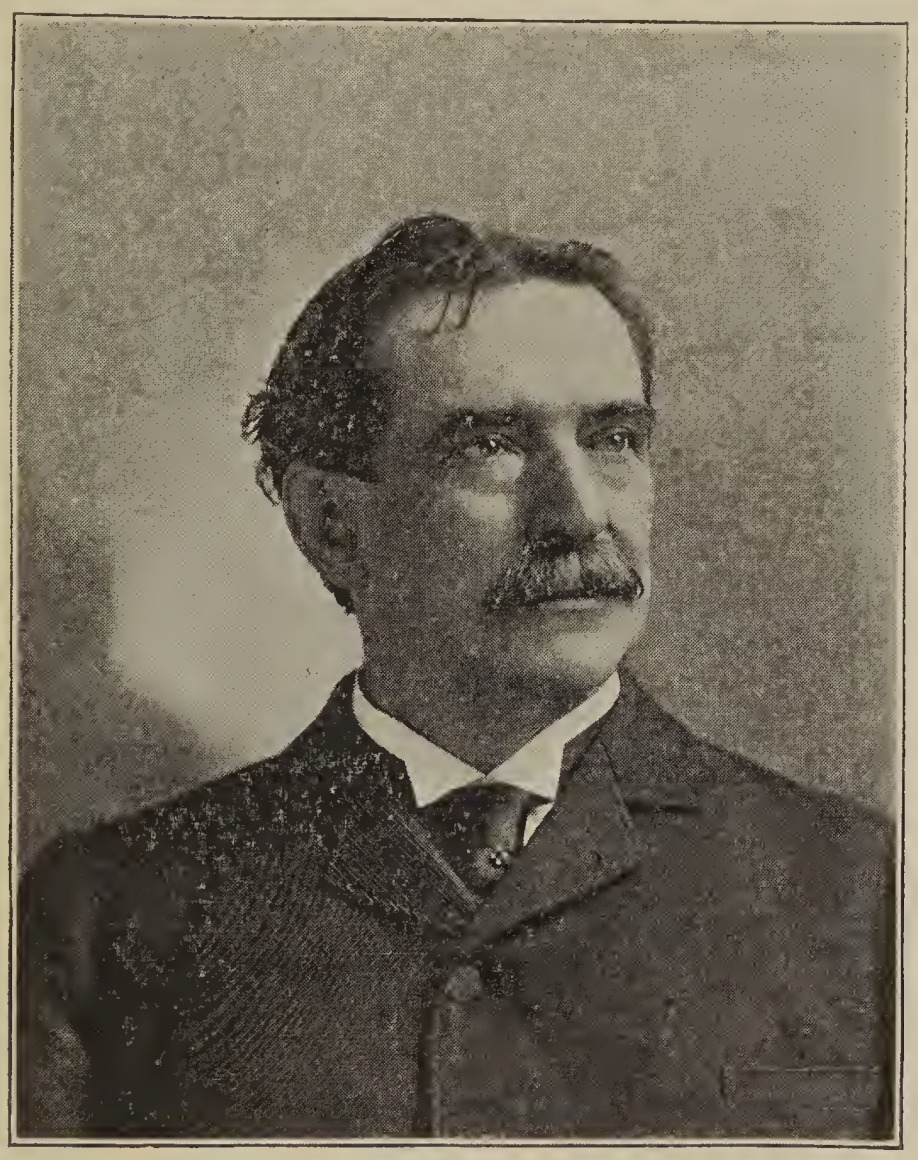
The German Apothecaries Society now has 3390 members—274 having been added to the list during the past year—and comprises about two-thirds of the members of the profession in the German Empire.

American Pharmaceutical Association.

The election of Professor A. B. Prescott, Dean of the School of Pharmacy of the University of Michigan, as President of the American Pharmaceutical Association stands for something more than the ordinary annual election to this highly honorable position. It was a rather "tardy recognition," yet the heartiness with which the venerable teacher of so many representative pharmacists was greeted, the genuine pleasure that was manifested because of his acceptance, made up for all tardiness. The election of Dr. Prescott stands for much more than the recognition of his personal services to pharmaceutical science and education. This election stands for the appreciation of two things for which the name of Professor Prescott has always stood: higher pharmaceutical science and education. There was a time when such things were considered impracticable by a majority of the members of our Association. It must be gratifying indeed to have the former opponents of the ideals of the first university school request its Director to accept the presidency of the American Pharmaceutical Association as an expression of their present esteem. It redounds equally to the credit of our national organization to have among its members men who possess sufficient flexibility to change deep-rooted convictions if shown to be wrong, and who are glad of an opportunity to make amends.

Dr. Prescott's election at the Put-in-Bay meeting seems to have been especially opportune, for it is in a certain way the embodyment of what this meeting will ever stand for: the unstinted recognition of science, not only of more science, but of broader and deeper science in the household of pharmacy. The President alluded to its importance in his opening address. The Chairman of the Scientific Section, who is termed "level headed" by his druggist friends because he recognizes the practical value of things scientific, put in "an earnest plea for the cultivation of the scientific spirit" not only among his colleagues, but "among the body of our members" who are and, let us hope, always will be from the ranks of the pharmaceutical practitioner. The Chairman of the Committee on Education and Legislation emphasized its importance. The Association at large endorsed these statements and pleas by expressing itself in favor of demanding a good college training as a prerequisite for the state-board examination; by adopting the resolution made in accord with a suggestion

in the President's address "that whenever the special interests of the Association do not demand otherwise, the date and place of meeting ..... be so arranged that our members can attend the meetings of this Association and of the American Association for the Advancement of Science"; and finally by the election of its new President who has always stood for that which is high and broad both in pharmaceutical science and education. All of these expressions and mani-



Charles E. Dohme.
President of the Put-in-Bay meeting.

festations were perfectly spontaneous and yet the Association could not have gone on record with a more creditable set of resolutions in the last year of grace belonging to the cycle eighteen hundred.

The National Association of Retail Druggists should receive our thanks if for no other reason than that it has relieved the minds of many of our members of the necessity of our "doing something" special for the retail druggists. By holding high the standard of science, the A. Ph. A. is doing more permanent good for the phar-

maceutical practitioner than all N. A. R. D's will ever accomplish, although we have no desire whatever to minimize the present and permanent good this association can accomplish if conducted in accord with the best economic and business principles. This sentiment was expressed in the following paragraph of a report adopted by the Association: "The history of the American Pharmaceutical Association has frequently and amply demonstrated the fact that its strength lies in pharmaceutical advancement along general and broad lines rather than in police* regulation. In the advancement of scientific truth, in the general counsel of matters educational and legislative, in the application of the sciences to the art of pharmacy, this Association has shown its strength and has made a history of which it need not be ashamed. If the Association has failed in the attempt to establish police* control over the college, the state-board or the cutter, such as has been suggested from time to time, we need not regret these failures, for the exercise of such functions might soon have deprived our organization of its best strength and usefulness. For this reason we should welcome, rather than deplore, the establishment of any organization which permanently—or if history should repeat itself—only for a short time relieves us of the necessity of giving—if for no other reason than by way of courtesy—our time and attention to matters which our Association by virtue of its character can never hope to control."

The good financial status of the Association (see p. 488) is a matter for congratulation. The resolution adopted that the interest on the general fund be not utilized until the income from this source amounts to $2000.00 per annum seems to be a good one.

The excellent work that is being done by the Committee of Revision of the U. S. Pharmacopœia with the money at its command is serving as a good object lesson. When the proper time has come we may hope that the income from the general fund will be spent wisely and to the credit of American pharmacy: be it in traveling fellowships or in the maintenance of a research (e. g. pharmacological) laboratory. In order to hasten this time if possible, might it not be well to establish another class of members, such as the American Association for the Advancement of science has, viz. patrons who make a single payment of $1000.00 or more toward such a fund.

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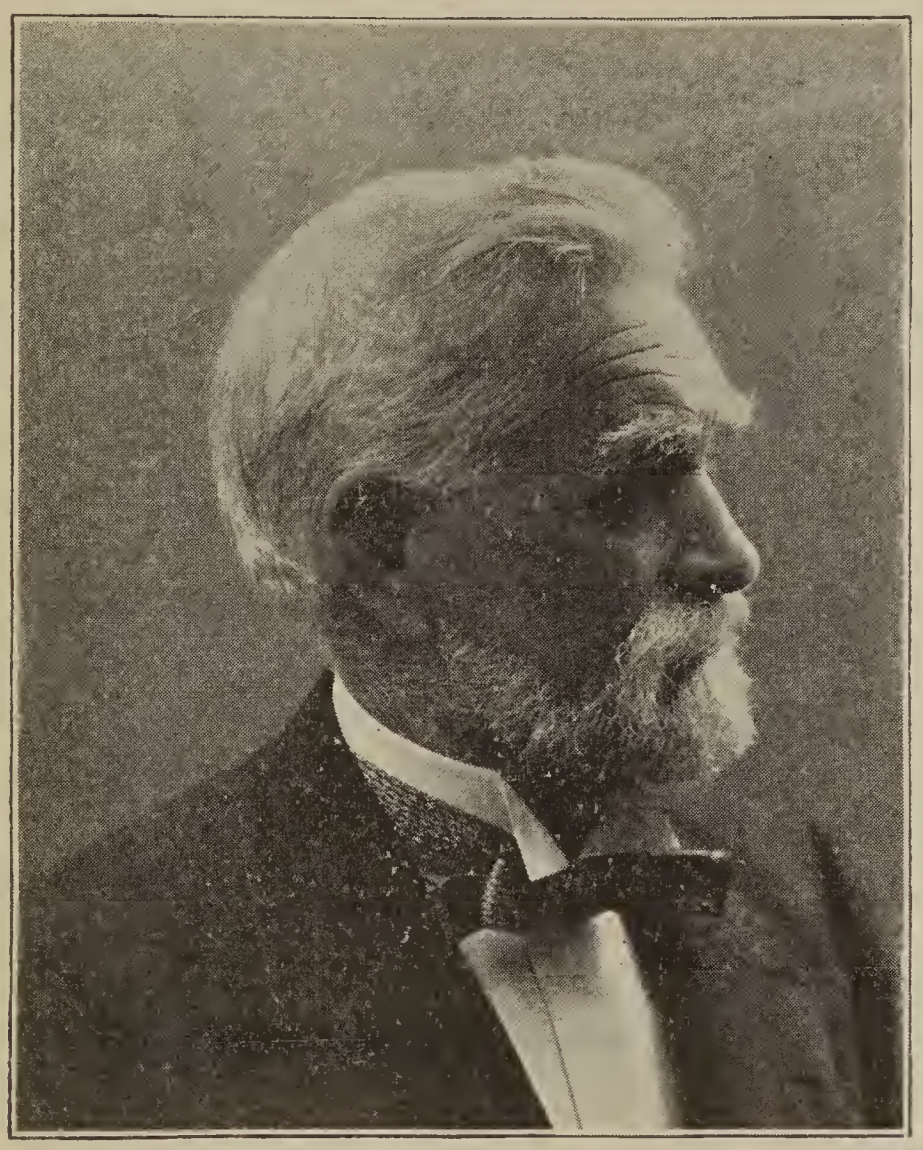
* In the report as adopted this word was stricken out.

It does not seem altogether improbable that some of our large manufacturers and wholesalers might be glad to advance American pharmacy by such a contribution. In this connection, attention should also be called to the announcement made by Mr. Eliel that he would next year submit a resolution to the effect that the privilege of reprinting the National Formulary be not extended to new editions or additions without the payment of a royalty as proper return for



Albert B. Prescott.
President-elect.

value received. There is no reason why the National Formulary should not receive all the benefits it can from the income to be possibly derived from it.

The Put-in-Bay meeting was also important from the fact that it was the last meeting before the session of the Convention for the Eighth Decennial Revision of the Pharmacopœia in Washington in May next year. The most important aspect that was discussed in this connection was that of the adoption of patented remedies into

the Pharmacopœia. After a lengthy discussion of patent and trade-mark laws from an economic standpoint the following resolution was introduced bearing on the actual needs of the occasion: "Recognizing the therapeutic importance of many patent d synthetic products, as well as the necessity of authentic information on these substances, the Section on Education and Legislation of the American Pharmaceutical Association [the question had been referred to this section for discussion by the general session] would recommend to the Convention for the Eighth Decennial Revision of the U. S. Pharmacopœia that the fact that a substance is patented be not allowed to stand in the way of its adoption into the Pharmacopœia if otherwise desirable."

Owing to the lateness of the hour, this resolution was tabled. At the last general session the following resolution couched in more general terms and admitting of interpretation to suit individual tastes was substituted and favorably acted upon:

"Resolved, That it is very desirable to increase the scope and usefulness of the U. S. Pharmacopœia and make it more popular with physicians and pharmacists.

"Resolved, That the American Pharmaceutical Association respectfully asks the convention of 1900 for the revision of the U. S. Pharmacopœia to introduce every feature that can properly be used to increase the use of the Pharmacopœia by every physician and pharmacist in the United States."

Unmistakable signs of looking backward as well as forward are manifesting themselves, and properly so. The Committee on the semi-centennial meeting to be held in Philadelphia in 1902 made a brief report of progress. Attention was called to Wm. Procter, the "father of American pharmacy," whom we could not afford to forget on that occasion. Congratulations were sent to Dr. E. R. Squibb, who has not been at the association meetings for many years, in "commemoration of the eightieth anniversary of his birth." To many, if not to most members present, it was a surprise to learn that among our officers we had one who had seen twenty-five years of uninterrupted service, viz. Mr. Geo. W. Kennedy, Secretary of the Council. The occasion was made memorable in a befitting manner.

Death has removed from our list of honorary members the only representative from the Austrian Empire, Anton von Waldheim (see p. 443), elected as early as 1871. Three new honorary members were elected at the Put-in-Bay meeting: E. M. Holmes, [Curator of the

Museum of the Pharmaceutical Society of Great Britain, and recently elected President of the British Pharmaceutical Conference; D. Hooper of India, coeditor with Dimock and Warden of the Pharmacographia Indica; and E. Schmidt, Professor of Pharmaceutical Chemistry at the University at Marburg, whose well-known text-book has made for him a name known as widely as pharmaceutical science is appreciated.

It is but natural that England and the British Empire should be accredited with the largest number of honorary members; but there is no reason why Austria should remain unrepresented on our roll any longer than next year, nor why Italy, Switzerland and Holland should not be represented at all at present. French scientists also are doing good work, and it does not look like good judgment on our part to accord France but one representative on our roll whereas Great Britain is so liberally represented. Then it would also seem as though we had overlooked South America altogether. In looking over our roll of honorary members it seems as though no definite policy whatever had been followed in bestowing our honors. Might it not be well to make a thorough study of this subject in time for our semi-centennial meeting?

The Commercial Section. After the failures of the Commercial Section in recent years, the results accomplished by its chairman last year were greeted with applause upon applause until a member suggested that the section might have some consideration for the feelings of their presiding officer. That it is much easier to applaud the work of others than to do something yourself was apparent not only last year to him who cared to see, but was demonstrated at Put-in-Bay to the mentally blind. They were told last year that God helps those who help themselves and that those who are constantly waiting for others to "do something" for them will get left in this world. Last year the chairman had done most of the work accomplished by the section. This year he struck for good reasons, with the result that not a single report or paper was presented.

Fortunately, a special Committee on Practical Pharmacy had been appointed last year. The report of this committee, which began with the ominous words "disappointed but not discouraged," and a discussion of the objects and doings of the National Association of Retail Druggists occupied the one session of this section. An exciting

discussion made most of the members forget that the Commercial Section as such had proved an absolute and undeniable failure. None of the officers of the section being present, several officers of the N. A. R. D. were elected to temporarily fill the vacancies. The report of the temporary chairman, who was last year appointed chairman of the Committee on Practical Pharmacy, again revealed the deplorable fact that the practical druggists of this Association like those of the country at large cannot be persuaded to do something that does not promise immediate returns in dollars and cents. The report was an interesting one and shows how with but a little co-operation on the part of each member important results might be achieved.

The N. A. R. D. certainly received more attention and courtesy than it had a right to claim. It was altogether out of keeping with this spirit that the chairman of the Executive Committee of the N. A. R. D., who, though not a member of the A. Ph. A., sprang to his feet on one occasion and charged a member of the A. Ph. A., a practical druggist who did not agree with him, with an untruthful statement.

Furthermore, the sensitiveness on the part of the representatives of the N. A. R. D. to squarely face the unveiled statement of their object does not bode well for the future of their organization. They lay down the law for the retailer as well as for the wholesaler and manufacturer and enforce it with all the power of their organization. The detailed control which they exercise is police control. This term does not necessarily imply a burly Irishman with brass buttons and a wooden club, but the functions they exercise are those corresponding to the police departments of our various forms of government, using the term police in its broader sense. Those who object to the use of this term as expressing one of the principal functions of the N. A. R. D. had better consult their dictionaries.

The Scientific Section. As already stated, the Chairman's address was a strong plea for the fostering of the scientific spirit among the members of our Association. If this were more universal, there would be less need of talk about the cutting of prices, to say nothing about the higher tone it would impart generally to our profession. Whatever we may say about the advance pharmacy has made in recent years, the advancement has not been sufficiently rapid to keep up with the progress of science in general. The spirit, however, that is manifesting itself of late is decidedly encouraging.

At the request of the Chairman, a number of papers bearing on the characterization of drugs by the senses were prepared. These papers were very interesting in themselves and also provoked a very interesting discussion. (See titles on p. 487.) While this group of papers, bearing primarily on the description of drugs, dealt with qualitative properties, another group took up the quantitative aspect, viz. the assay of drugs and their galenical preparations. In addition to the chemical assay, the pharmacological assay was for the first time discussed at our association meetings by a pharmacologist. It is gratifying indeed that this branch of science, as important to pharmacy as it is to medicine, should have been represented as it was at Put-in-Bay. At previous meetings, we have had our attention called to the importance of this work, to the need of introducing pharmacology into the pharmaceutical curriculum; we have also learned that nothing has been more diffiult than to have our botanical and chemical investigations supplemented by pharmacological research; let us hope that, although one swallow does not make summer, the future will see this science established on a firm footing in the American Pharmaceutical Association.

All three sessions of this Section were very well attended, a live interest in the subjects as presented and discussed being manifested from beginning to end.

The Chairman of the **Section on Education and Legislation** read an address bearing principally on the subject of professional ethics. He made a plea for a code of ethics and, by way of illustration of the need of such a code, pointed to the official organ of the American Medical Association which weekly and grossly violates the ethical code of that organization. The plea is based on professional traditions and was worked out in logical sequence upon the historic basis that we cannot bring up all men to the practice of a life in accord with the highest ethical principles and that it is, therefore, necessary to separate the professional man by a higher code of ethics from the merchant or tradesman whose motives are supposed to be of a baser sort.

No one may deny that codices of ethics have done good in the past and, like creeds, accomplish a certain amount of good at the present time. But the inconsistency and even hypocricy engendered by them seems to more than counterbalance all the good they have ever accomplished. If further proof than the Journal of the American Medical Association is wanted this can easily be brought.

The establishment of several grades of ethics for human society seems almost like an ethical absurdity. The tendency for the higher grade to elevate the lower never seems as strong as that of the lower to drag down the higher to its own level. It seems well nigh certain that the great moral factors of this world have been those that made no class distinctions ethically speaking. How would the Christian church have fared if it had adopted one standard for congregational life and another for business life. The golden rule should apply to week days as well as to Sundays, to the tradesman as well as to the representative of the learned profession. The fact that we fall short of this standard in nine cases out of ten is no reason why we should adopt, if by implication only, a lower standard for any class of people.

The **social features** of the meeting were most enjoyable. Any monotony that might arise from the isolation on an island was overcome first of all by the company itself being housed in one spacious hotel, and secondly by smaller and larger excursions to the other islands and the mainland. Restful promenades, bathing on the sandy beach, caves that are interesting historically and mineralogically, glacial markings of rare beauty, vineyards and orchards, all offered diversion on the island itself and were enjoyed by those who were glad to get away from the busy city. In addition to the reception by the Ohio pharmacists on the first evening, another evening was given over to a reading by Professor J. U. Lloyd, who read several chapters of an unpublished manuscript on Kentucky folklore, which were greatly enjoyed. On Thursday the majority went to Cleveland where they were handsomely entertained, whereas a minority enjoyed the quiet of Put-in-Bay island and the lake. Another social feature at the close of the business sessions was the visit to Detroit where about one hundred members and ladies were the guests of Messrs. Parke, Davis & Co. The principal attractions were the bacteriological and pharmacological laboratories, the latest application of modern science in the household of pharmacy.

Aside from the new members and those visitors who are attracted from the immediate neighborhood, there is a nucleus of members, not necessarily all veterans, who attend more or less regularly and who constitute a kind of large family during the time of the annual meetings. This is especially the case on those alternate years when the Association meets at a summer resort. To them the annual

meeting means more than an annual business meeting or a mere summer outing, it is a reunion of personal friends interested in a common cause. To them as well as to those who met for the first time we extend greetings: "auf Wiedersehen" in Raleigh, next May.

E. K.

Anton von Waldheim.

At the approach of a new century the comparatively very small number remaining of the once considerable array of representative men of the passing glorious era of pharmacy is rapidly decreasing. Of these few standard bearers the most prominent one in the Austrian Empire, Anton, Schürer von Waldheim in Vienna, passed away on the 13th of July. He owed his commanding position and influence less to scientific and literary achievements than to his professional standing, his energy, nobility of character and personal grace and to administrative and parliamentary ability and skill.

Waldheim was the son of an apothecary in Vienna, whose successor in business he became. He was born February 26th, 1830, obtained his education in a high school in Vienna, his pharmaceutical training first in the store of his father and subsequently at the University of Vienna, where he received the degree of Master of Pharmacy (Magister pharmaciæ) in 1854. From 1854 to 1856 he clerked at Dresden, Paris and London until he came into possession of his father's pharmacy at the latter's death in 1856.

Waldheim soon won the consideration and the respect of the pharmacists and of the governmental authorities of the Austrian metropolis; he joined the Austrian Pharmaceutical Association at its organization in 1861 and was elected its chief presiding officer in 1870, which position he has filled for 27 consecutive years until he resigned in 1897 on account of failing health. Besides, he served in many positions of honor and as a member of the various Austrian pharmacopœia committees and of the Superior Sanitary Council. Waldheim also took an active part in past efforts to create an international pharmacopœia and participated in the various so-called international pharmaceutical congresses, serving as president in the one held in 1874 at St. Petersburg and as well versed interpreter in that held in London in 1881. Here he was elected chairman of a

committee for the second elaboration of a draft of a prospective international pharmacopœia, which draft he presented to the subsequent congress at Brussels in 1885.*

In all public positions of honor, both in professional and administrative matters, Waldheim distinguished himself by generous and good judgment, by untiring activity performing every duty to the full measury of his ability and thoroughness. For a life-time he

Anton von Waldheim.
1830—1899.

was an unfailing guide in the councils of the profession of his country. His public and domestic life was a most happy and prosperous one replete with useful work and generous charity.

Besides having received several decorations from the emperors of Austria and Russia, Waldheim was since many years an honorary member of the American Pharmaceutical Association, of the Pharmac. Society of Great Britain, of the British Pharmac. Conference, of the German Apotheker Verein and of the pharmaceutical societies

* Pharmaceut. Rundschau, vol. 3 (1885), pp. 141 and 221.

of St. Petersburg, Paris, Brussels, Madrid, Turin, Moskau, Copenhagen, Antwerp, Buda-Pest, etc.

The writer made the personal acquaintance of Mr. von Waldheim during his two weeks' stay in London in 1881 as American delegate to the International Pharmaceut. Congress and has enjoyed his friendship ever since, and an occasional personal meeting in Vienna, on the Sömmering Alp and at Prague. Well versed in the English language and fairly familiar with pharmacy in England and the United States, von Waldheim appreciated their representative men and offered to them his hospitable house and open hand at every opportunity of personal meeting. The remaining ones of them now sincerely share in the universal grief over the demise of so noble and generous a man and friend. *Fr. Hoffmann.*

Wild Cherry Bark.

By A. *B. Stevens.*

That wild cherry bark deteriorates with age may be seen by comparing the results of the following analyses.

The time at which the estimations were made is placed above results.

The method of estimation is that given by the writer on page 216 of the A. Ph. A. Proceedings for 1896.

The time of maceration may be reduced from 24 to 4 hours and possibly even greater reduction may be made.

Prunus serotina. Collected in May.	Assayed	Percent of HCN. March 1898.	March 1899.
No. 1. Bark from large branches,		0.0675	0.0539
No. 2. Bark from large branches,		0.1699	0.1486
No. 3. Refuse from grinding,		traces	none
No. 4. Bark from small branches,		0.0458	0.0296
No. 5. Bark from small branches,		0.0755	0.0702
No. 6. Refuse from grinding,		0.0188	0.0027
Collected Aug. 5, 1894.			
No. 7. Bark from large branches,		0.062	0.027
No. 8. Bark from large branches,		0.1025	0.0755
No. 9. Refuse from grinding,		none	none

	Collected November 29, 1895.		
No. 10.	Bark from stems,	0.0559	0.027
No. 11.	Refuse from grinding,	none	none
	Prunus Virginiana.		
No. 12.	Choke cherry bark,	0.0539	0.0188
No. 13.	Refuse from grinding,	0.0216	none
	Prunus serotina. Assayed	1896.	1899.
No. 14.	Bark from trunk,	0.082	0.054
No. 15.	Young green bark, powdered,	0.102	0.027
No. 16.	Same as 15 but not powdered until assayed,	0.102	0.098
No. 17.	Young green bark, powdered,	0.089	0.062
No. 18.	Same as 17 but not powdered until assayed,	0.080	0.071
No. 19.	Young bark, whole,	0.0942	0.0814
No. 20.	Young bark, whole,	0.128	0.118

Samples numbered from 1 to 13 were collected by Dr. H. H. Rusby at Franklin, N. J., and were kindly presented to the writer. These samples were in pasteboard boxes. Others were in glass bottles.

From above results we draw the following conclusions:

First, That the bark is best preserved in glass or air-tight retainers.

Third, That only whole, fresh bark should be used in the manufacture of galenical preparations.

The keeping qualities of the various preparations as compared with the bark will be a subject for further consideration.

I am indebted to E. D. Benjamin, Ph. C., for assistance in assay.

Pharmaceutical Laboratory, Ann Arbor, Michigan.

Popular German Names of Domestic Drugs and Medicines.*

By *Fr. Hoffmann.*

Amönlein, Amonsamen—*Fruct.amomi*
Ampfer—*Herb. acetosae.*
Ampferwurz—*Rad. lapathi acuti.*
Amselbeeren—*Fruct. rhamni cathart.*
Amselspiritus—*Spir. formicar.*
Amulettenpflaster—*Empl. galbani crocat.*
Andorn, weiss—*Herb. marrub. alb.*
" schwarzer—(*Herb.ballotae.*)
Andornwurzel—*Rad. anonidis.*
Angerblumen—*Flor. bellidis, Flor. millefolii.*
Angilkenwurzel—*Rad. angelicae.*
Angewandten Degenstiefel—*Ungt. digestivum.*
Angewandten Plumbicum—*Ungt. plumbi.*
Angulkenwurzel—*Rad. angelicae.*

* Continued from p. 402.

Anhaltspulver, rothes—*Cort. cinnam. pulv.*
Anhaltspulver, weisses—*Pulv. temperans alb., Kali nitric, pulv.*
Anhaltstropfen—*Tinct. cinnam.*
Anhaltswasser—*Aq. aromatica.*
Anis, langer—*Fruct. foeniculi.*
Aniswurzel—*Rad. consolid, Rad. hellebori.*
Aniswurzelsalbe—*Ungt. contra scabiem.*
Annegilkenwurzel—*Rad. angelicae.*
Annepotanne—*Ungt. hydrarg. cin. dil.*
Anodyne—*Spir. aethereus.*
Anotte—*Orlcana.*
Anschusspflaster—*Empl. fuscum.*
Anschusswasser—*Aq. vulner, vinosa.*
Ansprungssalbe—*Ungt. leniens,* Ungt. *zinci.*
Anton—*Herb. Marrubii, Herb, ballo-*
Antoniuskörner—*Sem. paeoniae.* [*tae.*
Anwachssalbe—*Ungt. rosmar. comp.*
Anwachstropfen—*Tinct. carminativa.*
Appelblüthe—*Flor. acaciae. Flor. granati.*
Apfelkraut—*Herb. marrubii.*
Apfelsalbe—*Ungt. rosatum, Ungt. hydr. rubri.*
Apfelsinenschaalen—*Cort. aurantii dul.*
Apodolic—*Apodeldoc. Empl. plumb. comp.*
Apolloniakörner—*Sem. paeoniae.*
Apostelsalbe—*Ungt. basilicum.*
Apostole—*Empl. cerussae, Empl. plumbi. comp.*
Apoteltod } *Opodeldoc.*
Apothecka } (*Linim. saponis.*)
Appelblom—*Flor. rhoeados, Flor.*
Appelquint—*Colocynthis.* [*acaciae.*
Appetitstropfen—*Elix. aurant. comp.*
Aprilwurzel—*Rad. sarsaparillae.*
Arand—*Olibanum.*
Arcäbalsam, Arzeesalbe—*Ungt. elemi.*
Arcanisch, Balsam—*Ungt. elemi.*
Arcanum duplicat.—*Kali sulfuric.*
Archidiakonuspflaster—*Empl. plumbi*
Arkelklein—*Rad. angelicae.* [*comp.*
Arkebusade—*Aq. vulner. vinosa.*
" braune—*Mixt. vulner. .... acida.*
Armendill—*Rad. tormentillae.*
Armer Heinrich—*Herb. chenopodii.*
Arnica spiritus—*Tinct. arnicae.*
Aromat. Kräuter—*Species aromaticae.*
Aromat. Salbe—*Ungt. rorismar. comp.*
Aronswurzel—*Rad. ari.*
Arquebusade—*Aq. vulner. vin.*
" braune—*Mixt. vulner. acid.*
Arretatsalbe—*Ungt. flavum.*
Arrowmehl—*Amyl. marantac.*
Arten—*Herb. marrubii.*
Asam } *Asa foetida.*
Asand }
Asangöl, Asanttropfen—*Tinct. asae foetidae.*
Aschafischfett }
Aschenfett } (*Ol. jecor. aselli flav.*)
Aschenöl }
Aschensalz—*Kali carbonic. crud.*
Aschwurzel—*Rad. dictamni alb.*
Asiatischer Balsam—*Elix. propriet. sine acido.*
Asienawurzel—*Rad. gentianae.*
Attig—*Sambucus nigra,* auch *Sambucus ebulus.*
Attigkraut—*Herb. althacae.*
Attigsamen—*Fruct. foeniculi.*
Auflattig—*Fol farfarac.*
Auflattigsaft—*Syr. althaeac.*
Aufmunterungstropfen—*Tinct. aromatica.*
Augenbalsam, rother—*Ungt. hydrarg. rubr.*
" weisser—*Ungt. zinci.*
Augenessenz—*Tinct. foeniculi.*
Augengrau—*Tutia praepar.*
Augenkurirstein—*Zinc. sulfur.*
Augenlicht—*Ungt. zinci.*
Augennichts—*Ungt. zinci, Nihil. alb., Zinc. sulfur.*
Augennichtspflaster—*Empl. fuscum.*

Augensalbe, rothe—*Ungt. hydrarg.*
" weisse—*Ungt. zinci.* [*rubr.*
Augenstein, weisser—*Zinc. sulfur.*
" blauer—*Cupr. aluminat.*
Augentabak—*Pulv. sternutator.*
Augenthee—*Herb. farfarae, Herb. viol. trieol.*
Augenthee—*Herb. violae tricol.*
Augentrost—*Herb. euphrasiae.*
Augenwurtz—*Rad. valerianae.*
Augsburger Lebensessenz—*Elix. ad long. vit.*
" Tropfen—*Elix. proprietat.*
" Thee—*Spec. pectorales.*
Augustblumen—*Flor. stoechadis.*
Auriken—*Herb. centaurii.*
Aurikeln—*Flor. primulae.*
Ausländisch Moos—*Lich. islandicus.*
Ausschlagesalbe—*Ungt. sulfurat., Ungt. hydrarg. alb., Ungt. hydrarg. rubri.*
Auschusspflaster—*Empl. fuscum.*
Austernschaale—*Comchae praep.—Creta praecipitata.*
Auszehrungskräuter—*Herb. galeopsid. grandiflor.*
Auszugsöl—*Ol. chamomillae coetum.*
Axtract—*Liqu. plumbi acet.*

Bachbungen—*Herb. beccabungae.*
Bachblumenkraut—*Herb. beccabungae.*
Bachholder—*Flor. sambuci.*
Bachkresse—*Herb. nasturtii.*
Backsalz—*Ammon. carbonieum.*
Badenken—*Flor. primulac.*
Badeschwefel—*Kalium sulfuratum.*
Badian—*Fruct. anisi stell.*
Badkraut—*Herb. origani, Herb.*
Bärentreck—*Succ. liquir.* [*tanaeeti.*
Bärenfett, Bärmutterfett } (*Adeps suillus.*)
Bärenklau, Bärenkraut, Bärentraube } *Fol. uvae ursi.*
Bärenpulver—*Lyeopodium.*
Bärensamen—*Lycopodium.*
Bärenzahn—*Herb.* und *Rad. taraxaci.*
Bärklee—*Herb. meliloti.*
Bärlappspulver, Bärlappsamen } *Lyeopodium.*
Bärsfett—*Adeps. Ol. jecor. aselli.*
Bärwurzel—*Rad. mei* (*Rad.carlinae.*)
Bäsinge—*Bacc. myrtilli.*
Bäumchenhohlwurzel—*Rad. aristoloch eavae.*
Balderjahn, Baldrian—*Rad. valerianae.*
Baldrath—*Cctaceum.*
Baldrianliquor—*Tinct. valerian aeth.*
Baldriantropfen—*Tinct. valerianae.*
Balherundetropfen—*Elix. aurant. comp.*
Ballentätschkraut—*Herb.*
Bollote—*Herb. ballotae.* [*plantaginis.*
Ballrath—*Cctaceum.*
Balsam, abgezogener (zum Einnehmen)—*Elix. ad long. vit.*
" " (äusserlich)—*Ol. terebinth.*
Balsam Arcee, Balsam-Arztsalbe, Balsam-Atze } *Ungt. clemi.*
Balsam-Burr—*Tinct. benzoes comp.*
Balsam Commendator—*Tinct. benz. comp.*
" Cumpavia, " fifeifia } *Bals. copaivae.*
" Jesusalemer—*Tinct. benz. comp.*
" Harlemmer—*Ol. terch. sulf.*
" Indischer—*Bals. peruvian.*
Balsam komm bei mich—*Bals. copaivae.*
Balsam Mercurius—*Ol. thercbinth.*
" schwarzer—*Bals. peruvian.*
" schwedischer—*Elix. ad long. vit.*
" Inkumsöl—*Bals. peruvian.*
Balsamkraut—*Herb. menth. erisp., Herb. tanaceti.*
Balsamöl—*Bals. peruvian.*
Balsampavian—*Bals. copaivae.*
Balsampflaster—*Empl. fuscum.*

Balsamsalbe—*Ungt. basilicum.*
Balsamsulfuris—*Ol. lini sulfurati.*
Balsamthee—*Rad. valerianae.*
Balsamum aromaticum—*Mixt. oleos. bals.*
Balsamtropfen—*Tinct. benz.comp.,Ol. tereb. sulf., Elix. ad long. vit., Mixt. oleos. bals.*
Balsammum cephalicum—*Mixt. oleos.*
Balsterjahn—*Rad. valerianae. bals.*
Bandpflaster—*Empl. canth. perpet. extensum.*
" (zum Heilen)—*Empl. fusc.*, auch *Empl. adhaes. extens.*
Bandwurmrinde—*Cort. rad. granati.*
Bandwurmwurzel—*Rad. filicis.*
Barbarasaft—*Sir. rhie.*
Barfett—(*Adeps suillis* od. *Ol. jecoris asselli.*)
Barngrundsalv—*Ungt. basilicum.*
Barrenstein—*Succinum rasp.*
Basilienkraut—*Herb. basilici.*
Basilikumpflaster—*Cerat. resinae pini.*
Basilikumsalbe—*Ungt. basilicum.*
Basselbeere—*Bacc. sorbi.*
Bathengel—*Herb. chamaedryos,* (*Herb. scordii.*)
Batonie—*Herb. betonicae.*
Baumann's Tropfen—*Spir. angelia comp. Amk. Tinct. aromatica. Tinct. amara.*
Baumchenhohlwurzel—*Rad. aristoloch. cav.*
Baumfarnwurzel—*Rad. polypodii.*
Baumharz—*Cerat. resinae pini.*
Baumholderblumen—*Flor. sambuci.*
Baummoos—*Herb. pulmon. arbor,* (*Lichen island.*)
Baumöl—*Ol. olivarum.*
Baumharz / Baumwachs } *Cerat. arboreum.*
Bebinelle—*Rad. pimpinellae.*
Bedwas—*Cerat. arborcum.*
Beerlappsamen—*Lycopodium.*
Beersat—*Fruct. foeniculi.*
Beginnenkörn—*Sem. paeoniae.*
Behenöl—*Ol. olivarum.*
Beibs / Beifuss } *Herb. artemisiae.*
Beifusssaft (extern)—*Ungt. linariae, Ol. hyoscyami.*
Beifusswurzel—*Rad. artemisiae.*
Beinheil—*Rad. consolidae.*
Beinpflaster—*Empl. plumbi comp.*
Beinwurz—*Rad. consolidae.*
Beiss-, Bisswurz—*Anemone pratense.*
Belinispiritus—*Spir. rosmarini.*
Benderpflaster—*Empl. fuscum.*
Belzwachs—*Cerat. citrin.*
Benedicten-distel-Kraut—*Herb.*
Benedikterwurzel—*Rad. caryophyllatae.*
Benedixtropfen—*Tinc. amara.*
Benedixenthee—*Herb. carduae ben.*
Benzoin—*Bayoc.*
Berberbeeren—*Eruct. berberidis.*
Berberitzensaft—*Sir. berberidis.*
Bergeröl—*Ol. jecor. aselli.*
Bergkümmel—*Scm. seselios* (*Fruct. anethi.*)
Berglavendel—*Herb. origani cretici,* (*Herb. thymi.*)
Bergmann's Tropfen—*Tinc. aromatica*
Bergmünze—(*Herb. menth. crisp.*)
Bergnaphta—*Petroleum.*
Bergöl—*Petroleum.*
" schwarzes—*Ol. rusci.*
Beritzen—*Bacc. myrtilli.*
Berklasse—*Fruct. lauri, Fruct. berberidis.*
Berliner Salz—*Natr. bicarbon.*
Berliner Thee—*Spec. lax. St. Germ.*
Bernbommistel—(*Viscum. alb.*)
Bernitzkekraut—*Fol. vitis idaeae* (*Fol. uvae ursi.*)
Bernsteingruss—*Succinum rasp.*
Bernsteinsalbe—Ungt. basilicum.
Bernsteinöl—*Ol. succini.*
Bertramblumen—*Flor.pyrethri* (*Flor. chamomill. Rom.*)
Bertramwurz—*Rad. pyrethri.*
Berufkraut—*Herb. conizae, Herb. sideritidis, Herb. linariae.*
Beruhigungspulver—*Pulv. magnes. c. rheo.*

Beruhigungssaft—*Sir. diacodii, Sir. papaveris.*
Beruhigungstropfen für Kinder—*Sir. diacodii, Tinct. valerian.*
Beschreikraut—*Herb. sideritidis., Herb. conyzae.*
Besenginster } *Herb. spartii scoparii.*
Besenkraut }
Besinge—*Bacc. myrtilli.*
Bestuscheff's Nerventropfen—*Spir. aeth. ferri chloridi.*
Betonienkerne—*Sem. paeoniae.*
Betonienkraut—*Herb. betonicae.*
Betonienpflaster—(*Empl. meliloti.*)
Betonikablumen—*Flor. paeoniae.*
Betschelethee—*Flor. sambuci.*
Beulenharz—*Terebinthina.*
Bezoarpulver—*Pulv. epilepticus.*
Bezoarwurzel—*Rad. bardanae.*
Bibugeiltropfen—*Tinct. castorei.*
Bickelkeere } *Bacc. myrtilli.*
Bickbeeren }
Biebcheressenz—*Tinct. pimpinellae.*
Bieberfett—(*Adeps suillus.*)
Biebergeil—*Castoreum.*
Biebergeilfett—(*Adeps cum guttis nonnullis Tinct. castorei mixtus.*)
Biebergeist—*Tinct. castorei.*
Bieberklee—*Herb. trifolii.*
Biebernellenessenz—*Tinct. pimpinellae.*
Biebernellwurzel—*Rad. pimpinellae.*
Biefoth—*Artemisia.*
Bienenharz—*Benzoe.*
Bienenkraut—*Herb. melissae.*
Bienensang—*Flor. lamii. Flor. et Herb. meliloti.*
Bienenspeck—*Cetaceum.*
Bierkraut—*Carrageen.*
Biester's Magentropfen—*Elix. amar. Stoughton.*
Bilsenkörner—*Sem. hyoscyami!* (*Fruct. petroselini.*)
Bilsenöl—*Ol. hyoscyami coct.*
Bilsensamen zum Räuchern—*Fruct. hyoscyami!* (*Sem. petroselini.*)
Bimbernell—*Rad. pimpinellae.*
Bimsenstein—*Lap. pumicis.*
Bimsmehl—*Lap. pumic. pulv.*
Bingelkraut—*Herb. mercurialis.*
Binsenöl—*Ol. hyoscyami.*
Birkenöl—*Ol. rusci.*
Birkentheer—*Ol. rusci.*
Bisam—*Moschus.*
Bisamkörner—*Sem. abelmoschi.*
Bisamstorchschnabel—*Herb. geranii moschati.*
Bisam-, Bisengwurzel—*Rad. sumbuli.*
Bischoffessenz—*Tinct. episcopalis.*
Bischoffthee—*Spir. pectoralis c. fruct.*
Bitterappel—*Fruct. colocynthidis.*
Bitteramselkraut—*Herb. polygalae.*
Bitterausatz—*Species hierae picrae.*
Bitterblatt—*Herb. trifolii.*
Bitterdistel—*Herb. cardui ben.*
Bitterholz—*Lign. quassiae.*
Bitterklee—*Herb. trifolii.*
Bitterkreuzwurzel—*Rad. gentianae.*
Bittersalz—*Magnesia sulf.*
Bitterstiele—*Stipit. dulcamarae.*
Bittersüss—*Stip. dulcamarae.*
Bitterwurzel—*Rad. gentianae.*
Bixbeeren—*Fruct. myrtillorum.*
Blackfischbein—*Ossa sepiae.*
Blähungspulver—*Pulv. liquir. comp.*
Blähungstropfen—*Tinct. carminativa*
Blagen=Blau.
Blagen-Schwefel—*Sulfur griseum.*
Blagen-Stein—*Cupr. sulfur.*
Blankenheimer Thee—*Herb. galeopsidis grandiflor.*
Blasenkirsche—*Bacc. alkekengi.*
Blasenpflaster—*Empl. cantharid.*
Blasenzug—*Empl. cantharid.*
Blaubeeren—*Fruct. myrtilli.*
Blaue Endwendung } *Ungt. hydr. ciner. dilut.*
Blauer Mercurius }
Blauen Umwand }
Blauer Dost—*Herb. origani vulg.*
Blauer Galizienstein—*Cupr. sulfur.*
Blauer Vitriol—*Cupr. Sulfur.*
Blauholz—*Lign. campechian.*
Blau Oeskensaft—*Sir. flor. violar.*
Blausalz—*Kal. ferro cyanat. flav.*

Blauspähne—*Lign. campechian.*
Blaustein—*Cupr. sulfuric.*
Blauveilchensaft—*Sir. flor. violar.*
Blauwasser—*Aq. coerulea.*
Bleekwater—*Liq. natri hypochlorosi!*
Bleiasche—(*Lithargyrum.*)
Bleichkalk—*Calcar. chlorata.*
Bleichpulver—*Calcaria chlorat.*
Bleichsuchtpillen—*Pil. Slaudii—Pil. Valetti.*
Bleichsuchttropfen—*Tinct. ferri pom.*
Bleichwasser — *Liq. natrii hypoch-*
Bleicerat—*Ungt. plumbi.* [*lorosi!*
Bleierz—*Plumbago.*
Bleiessenz, Bleiextract } *Liquor plumbi subacet.*
Bleiglätte—*Lithargyrum.*
Bleiglättpflaster — *Empl. p l u m b i*
Bleiwasser—*Aq. plumbi.* [*simpl.*
Bleiweiss—*Cerussa* (zum Einstreuen in wunde Hautsstellen—*Zinc. oxydat.*)
Bleizucker—*Plumb. subaceticum.*
Bliewit—*Cerussa.*
Bliewater—*Aq. plumbi.*
Blitzpulver—*Lycopodium.*
Blöth, Blohmen=Blüthe, Blumen.
Blümchenwasser—*Aq. aromatica.*
Blümlischnupf—*Pulv. sternutat. vir.*
Blüthen, allerlei—*Pulv. fumalis.*
Bluh=blau.
Blumenschwefel—*Sulfur sublimat.*
Blumenstaub—*Lycopodium.*
Blunkenpulver—*Pulv. equor. gris.*
Blutholz—*Lign. campechian.*
Blutlangensalz—*Kal. ferro cyanat.*
Blutreinigung - Latverge — *Elect. e senna.*
Blutreinigungspillen—*Pil. laxantes.*
Blutreinigungspulver — *Pulv. liquir. comp.*
Blutreinigungsthee—*Spec. lignorum.*
Blutreinigungstropfen — *Tinct. pini comp.*
Blutsafran—*Empl. oxycrocei.*
Blutstillungstropfen—*Lig. Ferri sesquichlor.*
Blutschwamm—*Bolet. igniar.*
Blutstein—*Lap. haematitis.*
Blutwurzel—*Rad. tormentillae. Rad. alkannae.*
Boarfett—*Adeps ursinus* (*Adeps suillus.*)
Bockholz—*Lign. guajaci.*
Bocksblut—*Sang. hirci pulv.*
Bockshornsaft—*Sir. spinae cerv.*
Bockshornsamen—*Sem. foeni graeci.*
Bockskraut—*Anemone pratensis.*
Bockstalg—*Sebum ovilum.*
Bockswurzel—*Rad. pimpinellae.*
Börnstein—*Succinum.*
Bohmwachs—*Cerat. arboreum.*
Bohnenkraut—*Herb. saturejae.*
Bohnenmehl—*Fabae albae pulv.*
Bohrenfett—*Adeps ursi* (*porci*).
Boley—*Herb. pulegii.*
Bollerjahn—*Rad. valerianae.*
Boratsch, Boretsch—*Herb. boraginis.*
Borgelblumen—*Flor. boraginis.*
Bork=*Cortex.*
Borkenpulver, Borkpuvler, " rasirtes, " 77erlei } *Cort. chinae pulv.*
Bornkraut, Bornwurz—*Herb. cardui bened.*
Borsdorfer Salbe—*Ungt. rosat.*
Brämeleblätter—*Fol. farfarae.*
Brahm—*Herb. genistae* (*Flor. spartii scop.*)
Brandlatschen—*Fol. farfarae.*
Brandöl—*Ol. lini empyreumat., Ol. philosoph.*
Brandsalbe—*Ungt. plumbi.*
Brasilien Balsam—*Bals. copaivae.*
Brasilienholz, rothes—*Lign. fernambuci.*
" schwarzes—*Lign. campechian.*
Brasiliensalbe—*Ungt. basilicum.*
Braunheil—*Herb. prunellae.*
Braune Arkebusade — *Mixt. vuln.*
Braunelle—*Herb. prunellae.* [*acida.*
Braunellensalz—*Nitrum tabulatum.*
Brauner Dost—*Herb. origani.*
Braune Tafelsalbe—*Empl. fuscum.*

Braune Zehrtropfen—*Tinct. amara.*
Brauner Zug—*Empl. fusc., Empl. plumbi comp.*
Braunes Mutterpflaster—*Empl. fuscum.*
Braunholz—*Lign. fernambuci.*
Braunrein, Braunreinigung } *Oxymel acruginis* auch *Mel. rosat. c. borace.*
Braunschweiger Salz—*Natr. sulfuricum.*
Braunsilienholz—*Lign. fernambuci.*
Braunsiljentropfen — *Tinct. chinoidini.*
Braunwurz—*Rad. scrophulariae, Rad. arnicae.*
Brausepulver—*Seidlitzpulver.*
Brechwein—*Vinum stibiatum.*
Brechwurzel—*Rad. ipecacuanhae.*
Breisselbeerblätter—*Fol. vitis idaei* (*Fol. uvae ursi.*)
Brehme—*Spartium scoparium.*
Bremenöl, Bremsenöl—*Ol. animale foedit.*
Brennkraut—*Herb. clematidis, Fol. arnic.*
Brennessel—*Herb. urticae.*
" Spritus—*Spir. sinapis.*
Bresilgenholz—*Lign. fernambuci.*
Brimmelblumen — *Spartium scoparium.*
Brockenmoos—*Lichen island.*
Brodkümmel—*Fruct. carvi.*
Brombeeren—*Fruct. rubi frutic.*
Bronsilke—*Herb. basilici.*
Bruchkraut—*Herb. herniariae glabr.* (*Herb. lycopodii.*)
Bruchpflaster—*Empl. saponat.*
Bruchpflaster, roth—*Empl. oxycroc. rubr.*
" braun, " schwarz } *Empl. fuscum.*
Bruhn=Braun.
Bruhn Dast (Dost)—*Herb. origani.*
Bruhn Galltropfen — *Elix. e succo liqu.*
Bruhn Togploster — *Empl. plumbi comp.*
Brunelle—*Herb. prunellae.*
Brunellensalz—*Nitr. tabulatum.*
Brunnheil—*Herb. prunellae.*
Brunnenkresse—*Herb. nasturtii.*
Brunnensalz—*Sal. thermar. carolin.*
Brunsiliensalbe, Brunsilkensalbe } *Ungt. basilicum.*
Bruniljenkraut—*Herb. basilici.*
Brunsiljenpfeffer—*Fruct. capsici.*
Brunsiljenpflaster—*Cerat. res. pini.*
Brunsiljensable—*Ungt. basilicum.*
Brunst—*Fungus cervinus.*
Brustbalsam—*Bals. peruvian.*
Brustbeeren—*Jujubae.*
Brustdiakel—*Empl. fuscum.*
Brustelixir—*Elix. e succo liquïritiae.*
Brustkraut—*Herb. violae tric.*
Brustkräuter, Liebersche—*Herb. galeops. grandiflor.*
Brustpflaster—*Cerat. cetacei, Empl. saponat.*
Brustpulver, grünes, Kurella'sches, preussisches, Wedel'sches — *Pulv. liqu. comp.*
Brustreinigungsthee—*Spec. pectoral.*
Brustsaft—*Sir. liquirit., Sir. althaeae.*
Brustsalbe—*Ungt. basilicum.*
Brustthee—*Spec. pectorales.*
" Liebersche—*Herb. galeopsidis.*
" Wiener—*Spec. pect. c. fructibus.*
Brusttropfen, " dänische } *Elix. e succo liqu.*
Brustwarzensalbe—*Ungt. leniens.*
Brustwurzel—*Rad. angelicae.*
Bruuspulver — *Pulv. aerophorus, Seidlitzpulver.*
Buchlunge—*Herb. pulmon. arbor.*
Buchsbaumblätter—*Fol. buxi* (*Fol. uvae ursi.*)
Büntzelwurz—*Rad. pimpinellae.*
Bückbeeren—*Fruct. myrtilli.*
Buerrosen—*Flor. malv. arbor.*
Bullerjahn—*Rad. valerianae.*
Bullharz—*Resina pini.*
Bullrichsalz—*Natr. bicarbon.*
Burasse—*Herb. boraginis.*
Burgundisch Pech, " Harz } *Res. pini.*

Buthänjenblumen—*Flor. paconiae.*
Butter, grüne—*Ungt. nervin. virid.*
Butterblume—*Flor. calendulae.*
Butterblumenwurzel—*Rad. karaxaci.*
Buxbaumblätter — *Fol. buxi* (*Fol. uvae ursi.*)

Canarienpflaster—*Empl. sapon. rubr.*
Canarienzucker—*Sacch. pulv.*
Canehl—*Cass. cinnam.*
Canehl, weisse—*Canella alba.*
Canehlblüthe—*Flor. cassiae.*
Cantorbalsam—*Ungt. ophthalm. rubr.*
Capillärsaft — *Syr. capill. veneris* (*Syr. flor. aur.*)
Cardobenedictenkraut—*Herb. cardui bened.*
Cardobenedictenöl—*Ol. absynthii.*
Cardobenedictensalz — *Kali carbon.*
Carobe—*Siliqua dulcis.* [*dep.*
Carthäuserpulver—*Pulv. pediculor.*
Carthäuserthee—*Herb. chenopodii.*
Carthamine—*Flor. carthami tinct.*
Cassenfissel—*Cassia fistula.*
Cassienholz, Cassienrinde } *Cass. cinnamom.*
Casteralrinde—*Cort. cascarillae.*
Catarrkraut—*Herb. chenopod. ambros.*
Cayennepfeffer—(*Piper hispan.*)
Cederbaum—*Herb. sabinae.*
Cedernholz—(*Lign. juniperi.*)
Cedernholzöl—*Ol. liqui juniperi.*
Cederöl, Cederessenz, Cederatöl } *Ol. citri* od. *Ol. terebinth.*
Cedroot—*Ol. citri.*
Celleripomade—*Ungt. hydrarg. alb., Ungt. simpl.*
Cementtropfen—*Tinct. cinnam.*
Cerat, gelbes—*Cerat. resini pini.*
Ceratsalbe—*Ungt. cercum.*
Cermelwurzel—*Rad. carlinae.*
Cervelatspiritus — *Liq. ammon. caust.* (!)
Chakerellenbork—*Cort. cascarillae.*
Chakrill—*Cort. cascarillae.*
Champon, weiss—*Ungt. hydrarg. alb.*
Chinaöl—*Bals. peruvian.*
Chinatropfen—*Tinct. cinchonae.*
Chocoladenpflaster—*Empl. fuscum.*
Christikreuzthee — *Herb. centaur.*
Christipalmöl—*Ol. ricini.* [*min.*
Christpflaster—*Empl. plumbi simpl.*
Christwurzel—*Rad. helleb. nigri* (!) *Rad. arnicae, Rad. enulae.*
Chrut=Kraut.
Cibeben—*Passullae majorcs.*
Cichorienblüthe—*Flor. cichor.* (*Flor. malv. sylv.*)
Cichoriensaft—*Sir. rhei.*
Ciriaksalbe—*Ungt. cereum.*
Citrachenschmiere—*Ungt. zinci.*
Citronenkraut, Citronenmelisse } *Herb. melissae.*
Citronenpflaster—*Cerat. citrin.*
Citronensalbe—*Ungt. hydrarg. citr. Ungt. flavum.*
Citronensalz—*Acid. citric. cryst.*
Clander—*Fruct. coriandri.*
Coane—*Rad. zedoariae.*
Cockelskörner — *Sem. cocculi* (!) *Pulv. pedicul. gris.*)
Colör—*Tinct. sacch. tosti.*
Commandeurbalsam, Commentatorbalsam } *Tinct. benzoes cp.*
Commandeursalbe—*Ungt. basilic.*
Comödiantenpflaster—*Empl. plumbi cp.*
Confectionspulver—*Pulv. magnesiae c. rheo.*
Creter Dost—*Herb. origani cret.*
C-Salbe—*Ungt. elemi.*
Cujonenpflaster—*Empl. plumbi comp.*
Culör—*Tinct. sacch. tosti.*
Curassaoschaalen—*Cort. aurantii.*
Curella'sches Pulver—*Pulv. liquirit. comp.*
Curirstein—*Zinc. sulfuric.* (!)
Cypressenöl—*Ol. cupressae.*
Cypressenthee—*Herb. melissae.*

Dachelsalbe—*Empl. plumb. comp.*
Dachsfett—*Adeps taxi* (*suillus*).

Dachsenkraut—*Herb. burs. part.*
Däcklonpflaster—*Empl. plumb. comp.*
Däg, schwarzer—*Ol. auun. föbit., Ol. rusci.*
Dänische Tropfen—*Elix. e succo*
Dagget, Daggert—*Ol. rusci.* [*liquir.*
Damedillwurzel—*Rad. tormentillae.*
Dangel—*Flor. lamii albae.*
Dannöl—*Ol. terebinthinae.*
Danziger Oel—*Ol. terebinth.*
Danziger Tropfen—*Tinct. arom.* auch *Tinct. amara.*
Darbant—*Terebinth. communis.*
Darmenfrasspulver—*Lycopodium.*
Darmkrampftropfen—*Tinct. rhei vin.*
Darmsaft—*Sir. papaveris.*
Darmreissaft—*Sir. Chamomillae.*
Darmwinde—*Pulv. magnes. c. rheo.*
Deakel=Diakel.
Defensivpflaster—*Empl. cerussae.*
Degen, schwarzer—*Ol. rusci, Ol. anim*
" weisser—*Ol. terebinth.* [*foetid.*
Degenstief, ungewandter—*Ungt. digestivum.*
Deklamirpflaster—*Empl. fuscum.*
Delinquenten Aepfel—*Fruct. colo-*
Demuthkraut—*Herb. thymi.* [*quint.*
Denk hin, denk her—*Cort. chinae pulv.*
Deputatsalbe, weisse oder rothe—*Ungt. hydrarg. albi* oder *rubri.*
Derbedilt Wurzel—*Rad. tormentillae.*
Deumenthee—*Herb. menthae crisp.*
Deutscher Ingwer—*Rad. ari.*
Diakel, braun oder gelb—*Empl. plumb. comp.*
" grüner—*Ungt. diachylon.*
" weicher—*Empl. fuscum.*
" weisser—*Empl. plumbi simpl.*
Diachelgummi, Diajalmapflaster, Diakelgummipflaster } *Empl. plumb. comp.*
Diakelpflaster, Diakelsimpel, Diakonuspflaster } *Empl. plumbi simpl.*
Diakostenöl—*Ol. origani.*
Diestelkraut—*Herb. cardui bened.*
Dickendam, Dickendarm } *Rad. diclamni albi* (*Rad. paeoniae*).
Diebsessig—*Acet. aromaticum.*
Dickentief—*Ungt. digestivum.*
Dicker Terpentin—*Terebint. com-*
Dievels=Teufels. [*munis.*
Dievels Abbiss—*Rad. morsus diaboli.*
Digestivpulver—*Pulv. rhei. comp. Natr. bicarbon.*
Digestivsalbe—*Ungt. digestivum.*
Digestivsalz—*Natr. bicarb.*
Dill, Dillsamen—*Fruct. anethi.*
" toller—*Sem. hyoscyami* (zum
Dillöl—*Ol. anethi.* Räuchern!)
Diptam, weisser—*Rad. dictamni* (*Rad. paeon.*)
Distelkraut, Distel, gesegnete } *Herb. cardui bened.*
Distelsamen—*Sem. cardui mar.*
Ditt und Datt—*Theriaca.*
Dolldill—*Sem. hyoscyami* (zum Räuchern!)
Dollkörner—*Sem. coculli! Pulv. pedicul.*
Dollkraut—*Fol. bellad., Fol. stramon., Herb. hyoscyami.* (!)
Dollsamen—*Sem. hyoscyami.* (!)
Donnerwurz—*Rad. aristoloch.*
Doppeldiakel—*Empl. plumb. comp.*
Doppelsalz—*Kali sulfuric., Natr. bicarb.*
Doppelten Natron—*Natr. bicarbon.*
Dorant, weisser—*Herb. marrubii.*
Dornschlehblüthe—*Flor. pruni spin.* (*Flor. acaciae.*)
Dost, braun, Dosten, blau } *Herb. origani vulgaris.*
" Kretischer—*Herb. origani cret.*
Dostöl—*Ol. origani.*
Dotterblumen—*Flor. calcndulae., Flor. verbasci.*
Dottuöl—*Ol. ovorum.* (*Ol. amypdal.*)
Drachenblut—*Sang. draconis.*
Drachenblut—*Resina draconis.*
Drachenöl—*Ol. hyperici.*
Drachenwurz—*Rad. bistortae.*
Dragonerblumen—*Flor. bellidis.*

Dragunten, Dragonell—*Artemis,. dracunculus.*
Dreiacker—*Elect. theriaca.*
Dreiblatt—*Herb. trifolii fibrin.*
Dreidornwurzel—*Rad. berberidis.*
Dreieinigkeitswurzel—*Rad. avydicae.*
Dreifaltigkeitskraut — *Herb. violae-tricol.*
Drei Jacob—*Empl. plumbi comp.*
Dreiockel—*Elect. theriacale.*
Dresdener Thee—*Spec. laxant. St. Germ.*
Driakelgummi, Driakelpflaster, Driakelsimpel } *Empl. plumbi comp.*
Driantensalbe—*Ungt. flavum.*
Driantpflaster—*Empl. plumbi comp.*
Drivpulver—*Pulv. equorum.*
Drög Nicht, Drögniss } *Nihil. album, Zinc. oxydat.*
Drögsalv — *Ungt. exsiccans, Ungt. zinci.*
Drop—*Succ. liquirit.*
Drüsenöl—*Linim. volat. camph.*
Drüsenpflaster—*Empl. saponat.*
Drüsenpulver—*Pulv. equor. gris.*
Druot'sches Pflaster — *Sparadrap. vesic. Druoti.*
Drusenpulver—*Pulv. equor. gris.*
Dubelskörner—*Fruct. coccali., Fruct. lauri.*
Dürrband—*Empl. oxycrocei.*
Düttensaft—*Sir. rhoeados.*
Düvels=Teufels.
Düvels Abbitt, Düvels Nachbit } *Rad. morsus diaboli.*
Dukatensamen—(*Sem. psyllii.*)
Dulcianstropfen—*Tinct. aromat.*
Dull Dill—*Sem. hyoscyami* (!) (zum Räuchern.)
Dull Dillenöl—*Ol. hyoscyami.*
Dummerjahn—*Herb. conizae.*
Dunst, grauer—*Tutia praep.*
" blauer—*Herb. origani vulg.*
Duplikatsalz—*Kali sulfur.*
Durchdringende Salbe—*Ungt. nervin.*
Durchdringöl—*Ol. hyperici, Ol. camphorat, Ol. hyoscyami.*
Durchgangstropfen—*Tinct. rhei vinosa.*
Durchgedrungengliederöl—*Ol. hyoscyami.*
Durchliegepflaster—*Empl. saponat.*
Durchwachskraut—*Herb. perfoliatae* (*Herb. pulmonariae.*)
Durchwachsöl—*Ol. hyoscyami, Ol. hyperici.*
Durchwachssalbe—*Ungt. populi.*
" gelbe—*Ungt. flavum.*
Durchzugspflaster, weises—*Cerat. cetacei.*
" schwarzes—*Empl. fuscum.*

Eberhard'sches Pulver—*Pulv. liquirit. comp.*
Eberraute, Eberreis, Eberruthe } *Herb. abrotani.*
Eberwurzel—*Rad. carlinae.*
Ebschen, Ebreschen } *Fruct. sorbi aucupar.*
Edelherztropfen—*Tinct. aromatica.*
Egelkraut—*Herb. gei urbani* (*Herb. num mulariae.*
Edelminze—*Herb. menth. pip.*
Egel—*Hirudines.*
Ehrenpreis—*Herb. veronicae.*
Eibelbeere—*Fruct. viburni opuli.*
Eibenbaum—*Taxus baccata.*
Eibischkraut—*Fol. althaeae.*
Eibischsaft—*Sir. althaeae.*
Eibischsalbe—*Ungt. flavum.*
Eibischthee, Eibischwurzel } *Rad. althaeae.*
Eichelkaffee—*Gland. quercus tosti.*
Eichenlunge—*Herb. pulmon. arb.*
Eichenmistel—*Viscum album.*
Eichenrindensalbe—*Ungt. plumbi tamirci.*
Eichwalswurzel—*Rad. gentian.*
Eiröl—*Ol. ovorum* (*Ol. papaver.*)
Eigelbeeren—*Bacc. myrtilli.*
Eikbuschthee—*Rad. althaeae.*
Einbeeröl—*Ol. ligni juniperi.*
Einfachesalbe—*Ungt. cercum, Ungt. rosatum.*

Eingangswurzel—*Rad. gentianae.*
Einklappe, Einkloppe, Einklopfpulver, Einstreupulver } *Lycopodium.*
Einwendung, blaue—*Ungt. hydr. cin.*
Eisblüthe—*Flor. lamii albi* [*dil.*
Eischholzsalbe—*Ungt. elemi.*
Eisel's Liniment — *Lin. volat. et Tinct. arnica aa.*
Eisenbaum—*Taxus baccata.*
Eisenkraut — *Herb. verbenae,* auch *Herb. veronic.*
Eisenkrautwurzel — *Rad. verben.* (*Rad. caryophyll.*)
Eisenöl—*Lign. ferri perchlor.*
Eisenpflaster—(*Empl. oxycroc.*)
Eisensalmiak—*Ammon. chlorat. ferr-*
Eisensalz—*Ferr. sulfur.* [*atum.*
Eisentinctur—*Tinct. ferri chlorati.*
Eisentropfen — *Tinct. ferri pomati,* auch *Tinct. ferri acet. aeth.*
Eisenvitriol—*Ferr. sulfuric.*
Eiskraut—*Herb. mesembrianth.*
Eiskrautwasser—*Aq. petroselini.*
Eissalbe—*Ungt. plumbicum.*
Eiterflusspulver—*Pulv. liquirit. comp*
Eiwisch—*Althaeae officinalis.*
Ekenmispel—*Viscum alb.*
Elappenpulver—*Pulv. laxans.* (*Rad. jalapae.*)
Elau—*Terebinthina veneta.*
Elderrindi—*Cort. Alni, Cort. almi.*
Elbensalbe—*Ungt. flavum.*
Element, fliegend oder flüchtig — *Linim. ammoniat.*
Elentshorn, Elentsklaue } *Conchae praep., Cornu cervi ustum.*
Elentsklauensaft—*Sir. althaeae.*
Elendskörner—*Grana paradisi.*
Elendswurzel—*Rad. pseudodani.*
Elephantenlaus—*Anacardia.*
Elfenbein, gebrannt—*Ebur ustum.*
Elfenbeinpulver—*Os. sepiae pulv.*
Elfenbortholz, Elfenbauholz } *Lign. juniperi.*
Elixirtropfen—*Elix. e succo liquiritiae.*
Elixir, saures—*Mixt. sulf. acida.*
Elixir, Schwedisch—*Elixir. ad long.*
Ellensankt—*Lign. guajaci.* [*vitam.*
Elmenrinde—*Cort. ulmi.*
Elsenbeerenöl—*Acet. pyrolign. crud.*
Elsenkraut—*Herb. absynthii.*
Emanuels Thee—*Spec. laxant.*
Engber—*Rad. zingib.*
Engelblümchen—*Flor. stoechados.*
Engelkenwurzel, süsse—*Rad. polypodii, Rad. angelicae.*
Engelsrauch—*Olibanum.*
Engelsüss—*Rad. polypodii.*
Engelwurz—*Rad. angelicae.*
Englisches Brausepulver — *Seidlitz powder.*
Englisch flüchtiges Salz — *Ammon. carb.*
Englisch Gewürz—*Fructus pimentae.*
Englisch Salz—*Magnes. sulfur.,* auch *Ammon. carbonic.*
Engwer—*Rhiz. zingiberis.*
Entbindungstropfen — *Tinct. cinnamomi.*
Entwendung, blaue—*Ungt. hydrarg.*
Enzelt=Einfach. [*cin. dilut.*
Enzian—*Rad. gentianae.*
" weisser, " witter } *Rad. gentinae alb.*
Er und Sie—*Rad. victor. longa et rotunda.*
Erbsensalbe—*Ungt. flavum.*
Erdbeerblätter—*Herb. fragariae.*
Erdbeersalbe, weisse—*Ungt. plumb.,* (*Cold cream.*)
Erde, Japanische—*Catechu.*
Erdgalle—*Herb. centaur. min., Herb.*
Erdharz—*Succinum.* [*fumariae.*
Erdkirschen—*Fruct. alkegengi.*
Erdpech—*Asphaltum.*
Erdrauch—*Herba fumariae.*
Erdschwefel—*Lycopodium.*
Erdwurmöl—*Ol. juniperi, Ol. rusci.*
Eremitenpflaster—*Empl. fuscum.*
Erhaltungstropfen — *Spir. aether, Tinct. carminat.*
Erlenvinde—*Cort Alni.*

Eröffnungsthee—*Spec. laxantes.*
Erweichende Kräuter—*Spec. emollientes.*
Erzäpfelwurzel—*Rhiz. curcumac.*
Eschenblatter—*Fol. vibium.*
Eschenblüthen—*Flor. acaciae.*
Eschenfett—*Ol. jcor. aselli.*
Eschenrinde — *Cort. fraxini* (*Cort. frangulae.*)
Eselfuss, Eselshuf } *Fol. farfarae.*
Eselspfotensaft—*Syr. althaeae.*
Esifitidi—*Asa foetida.*
Essentia dulcis—*Tinct. salis Hallensis, Spir. aeth. nitr.*
Essenz amara, Essenz mariana } *Tinct. amara.*
Essenztinctur—*Tinct. aloes comp.*
Essigelendsdruppen—*Aether acetic.*
Essiggeist, versüsster — *Spir. aeth.*
Essignaphta—*Aether acetic.* [*acct.*
Essigstätt—*Aether acetic.*
Estragon—*Herb. artemis. dracunculi.*
Ewerwortel—*Rad. carlinae.*
Ewigkeitspflaster — *Empl. canthar. perp.*
Ewig Lebensöl—*Mixt. oleos. bals.*
Exicrucipflaster—*Empl. oxycroceum.*
Exsickantsalbe—*Ungt. lap. calaminaris, Ungt. zinci.*
Extractum Saturnum, Extrasaturn } *Liq. plumbi subacet.*

Fadenwurzel—*Rad. cnulae, Rad. graminis.*
Färbekraut—*Herba genistae tinctoriae.*
Färbelpflaster—*Empl. matris.* [*riae.*
Färberginster—*Herba genistae.*
Färberröthe—*Rad. rub. tinctor.*
Färbersafflor—*Flor. carthami.*
Färberscharte—*Herb. serratulae tinctor.*
Fahlenfüsse, Fahlenpfotsblätter } *Herb. arnicae.*
Fallblumen—*Flor. calendulae, Flor. rhoeados.*
Fallkraut—*Herb. arnicae.*
Fallkrautblumen—*Flor. arnicae.*
Fallkrautwurzel—*Rad. arnicae.*
Falscher Safran—*Flor. Carthami.*
Familienthee—*Spec. laxant.*
Fanehsamen—*Fruct. fönic.*
Farbholz—*Lign. campechiani.*
Farina Wasser—*Spir. odoratus.*
Farnwurzel—*Rad. filicis.*
Faulbaumrinde—*Cort. frangulae.*
Faule Grete—*Sem. focni graeci pulv.*
" Rinde—*Cort. frangulae.*
Federalaun—*Asbest.*
Federblumen—*Flor. verbasci.*
Federweiss — *Asbest,* auch *Talcum*
Feigen—*Caricae.* [*pulv.*
Feigensaft—(*Sir. liquiritiae.*)
Feigenwurz—*Rhiz. iridis pro infant.*
Feigsblättersalbe—*Ungt. plumbi.*
Feine Grete, Feine Margarete } *Sem. foeni graeci.*
Feldandorn—*Herb. sideritis hirsutae.*
Felddoste—*Herb. origani.*
Feldgarbe—*Herb. millefolii.*
Feldkelle, Feldkümmel, Feldkümmelkraut } *Herb. scrpylli.*
Feldlattig—*Fol. farfarae.*
Feldmohn—*Flor. rhoeados.*
Feldpolei—*Herb. scrpylli.*
Feldguendel—*Herb. pulegii.*
Feldrosen—*Flor. rhoeados.*
Feldrauch—*Herb. fumariae.*
Feldraute—*Herb. rutae.*
Feldthymian—*Herb. serpylli.*
Feldwinde—*Herb. convolvuli* (*Flor. malv. vulg.*)
Felsenöl oder Spiritus—*Petroleum.*
Fenchel—*Fruct. foeniculi.*
Fenchelblüthe—(*Flor. lavand.*)
Fenchelholz—*Lign. sassafras.*
Fenchelsaft—*Sir. foeniculi.*
Fenikel—*Fruct. focniculi.*
Fenkohl—*Fruct. foeniculi.*
Fenugrek—*Sem. foeni graeci.*
Fernebock—*Lign. fernambuci.*
Fette Henne — *Sedum telephium, Herb. crassulae major.*
Fettstein—*Talcum.*

Feuerblumen—*Flor. rhocados.*
Feuerkraut—*Hcrb. musci pyxidati* (*Lich. islandic.*)
Feuerschwamm—*Polypor. fomentar.*
Fichtensprossen—*Turiones pini.*
Fieberblumen—*Herb. centaurii.*
Fieberklee—*Hcrb. trifolii.*
Fieberkraut—*Hcrb. centaurii.*
Fieberpech—*Chinoidinum.*
Fieberrinde—*Cort. chinae.*
Fiebertropfen—*Tinct. chinoidine.*
Fieberwurz—*Rad. gentianae.*
Fiedelharz—*Colophonium.*
Fieffingerkraut—*Herb. pentaphylli s. potentil.*
Fiefsteert—*Herb. fumariae.*
Fiene Margareth—*Sem. foeni graeci pulv.*
Fimfsteren—*Herb. fumariae.*
Finchel—*Fruct. focniculi.*
Fine Grete—*Sem. foeni graeci.*
Fingelthee—*Fruct. foeniculi.*
Fingerkraut—*Herb. potentillae.*
Finnegritt—*Sem. foeni graeci.*
Fischbein, weiss / Fischknochen — *Ossa scpiae.*
Fischkern / Fischkörner — *Sem. cocculi.* (!)
Fischleim—*Ichthyocolla.*
Fischöl—*Ol. jecoris.*
Fischreiherfett—(*Ol. jecoris flav.*)
Fischthran—*Ol. jecoris.*
Fixe Luft—*Lign. ammon. caust.*
Fix u. geschwind — *Liq. ammon. caust.* (!)
Flachskraut—*Herb. linariae.*
Flaxleinöl—*Ol. lini.*
Flaxmehl—*Sem. lini pulv.*
Flachslinsen / Flachssamen — *Sem. lini.*
Falchssalbe—*Ungt. linariae.*
Flachssaatmehl—*Pulv. sem. lini.*
Flechsensalbe—*Ungt. popul., Ungt. rorismar. comp.*
Flechtenpulver—*Pulv. liquirit. comp.*
Flechtensalbe—*Ungt. zinci, Ungt. hydrarg. alb.*
Fleckenlungenkraut—*Herb. pulmonar*
Fleck's Tropfen—*Elix. c succo liquirit*
Fleckwasser—*Javellawasser.* (!)
Fliederblüthe / Fliederthee — *Flor. sambuci.*
Flieder-Kreide, -Muss, -Saft — *Succ. sambuci insp.*
Fliegend Element—*Linim. ammoniat.*
Fliegend Salz—*Ammon. carb.*
Fliegenholz—*Lign. quassiae.*
Fliegenöl—*Ol. animale foetid.*
Fliegenpfeffer—*Piper longum.*
Fliegenpflaster—*Empl. cantharidum.*
Fliegenspähne—*Lign. quassiae.*
Fliegenthee—*Lign. quassiae.*
Fliere=Flieder.
Flöhkraut—*Herb. conyzae.*
Flöhpulver—*Flor. pyrethri.*
Flohsamen—*Sem. psyllii.*
Flüchtig Element—*Linim. ammoniat.*
Flüchtig Liniment—*Linim. ammoniat*
Flüchtigöl—*Linim. ammoniat.*
Flüchtig und geschwind—*Liq. ammon. caust.* (!)
Flüchtige Kampfersalbe—*Lin. ammon. camph.*
Flüchtige Salbe—*Linim. ammoniat.*
Flüchtig Salmiak — *Liq. ammon. caust.*
Flüchtiger Spiritus — *Liq. ammon. caust.*
Flüchtiges Salz—*Ammon. carbon.*
Flussblumen—*Flor. stoechados.*
Flussgeist—*Liq. ammon. caust.* (!)
Flussharz—*Anime.*
Flusskörner — *Sem. paeoniae,* auch *Succinum.*
Flussöl—*Linim. saponis,* auch *Ol. ca-*
Flusspech—*Resina pini.* [*jeputi.*
Flusspflaster—*Empl. canthar. perp.*
Flusspillen—*Pil. laxantes.* [*extens.*
Flusspurgirpulver—*Rad. jalapac.*
Flussrauch / Flussräucherpulver / Flussräucherung — *Succin. rasp.* oder *Spcc. ad sufficien dum.*
Fluss Salbe—*Ungt. rosmar. comp.*
Flussschnupftabak—*Pulv. sternutatorius.*

Flussspiritus—*Linim. saponis, Spir. lavend. comp.*
Flusstinktur—*Elix. ad long. vit.*
Flussvertheilungstropfen—*Tinct. carminativa.*
Fönugräkum—*Sem. foeni graeci.*
Foetum—*Asa foetida.*
Fontanellpflaster—*Cerat. res. pini, Empl. plumbi simpl.*
Fontanellsalbe—*Ungt. cantharid.*
Forellenpflaster—*Empl. plumbi comp.*
Fosssalv—*Ungt. plumbic.*
Fräselpulver—*Pulv. magnes. c. rheo.*
Fraetpulver—*Pulv. quo equis.*
Franzbranntwein—*Cognac.*
Franzosenharz—*Resin. quaiaci.*
Franzosenholz—*Lign. guajaci.*
Franzosenöl—*Ol. animale foet.*
Franzosensalbe—*Ungt. hydrarg. cin. dil.*
Französischer Thee—*Spec. laxant. St. Germ.*
Frauendistelsamen—*Sem. cardui Mariae.* [*riae.*
Fraueneis—*Glacies Mariae.*
Frauenflachs—*Herb. linariae.*
Frauenglas—*Glacies Mariae.*
Frauenhaar—*Herb. capillorum veneris s. adianthi aurei.*
Frauenmantel—*Herb. alchemillae.*
Freisamkraut—*Herb. violae tricol.*
Fresspulver—*Pulv. equorum.*
Friar's Balsam—*Tinct. benz. comp. U. S. P.*
Fröschlingspflaster—*Empl. cerussae.*
Froschlaichpflaster—*Empl. cerussae, Empl. plumbi comp.*
Froschlaischsalbe—*Ungt. cerussae.*
Frostsalbe—*Ungt. plumbi.*
Frostwasser—(*Aq. cinnam. 15, Acid nitr. 1.*)
Fuchsfenchel—*Fruct. phellandri.*
Fuchsfett—(*Adeps.*)
Fuchslungenöl—*Ol. hyperici.*
Fuchslungensaft—*Sir. liquir., Sir. rhoeados, Sir. althaeae.*
Fünfaderkraut—*Herb. plantag.* (*Herb. malv. vulg.*)
Fünfblatt, Fünffingerkraut } *Herb. potentillae, Herb. agrimonii.*
Fünffingerwurzel—*Rad. tormentillae.*
Fünfmännerthee—*Herb. agrimonii.*

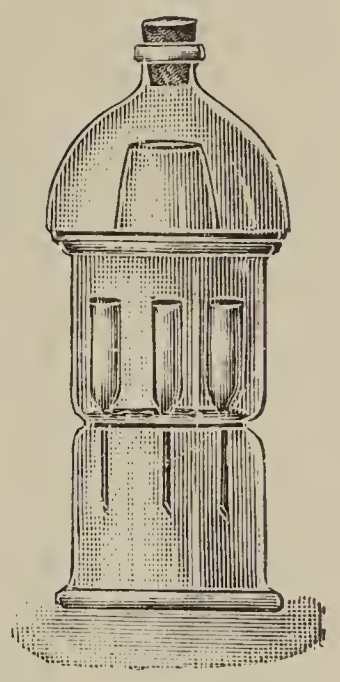
Gachelkraut—*Herb. millefolii.*
Gachheil—*Herb. anagallidis.*
Gähl=Gelb.
Gähllendewas—*Empl. plumb. comp.*
Gähl Göllingthee—*Flor. calendulae.*
Gählsuchtpulver, Gählsuchwörteln } *Rad. curcumae pulv.*, auch *Rad. rhei pulv.*
Gähltogpflaster—*Empl. plumb. comp.*
Gähl-Wundsalbe—*Ungt. basilic.*
Gänseblumen—*Flor. bellidis.*
Gänsefuss—*Herb. potentillae.*
Gänsepappel—*Malva vulgaris.*
Gänserich—*Herb. potentillae.*
Galante—*Rhiz. galangae. Rad. helenii.*
Galapp—*Tub. jalapae.*
Galaun—*Alumen.*
Galgan—*Rhiz. galangae.*
Galgennägel—*Flor. cassiae.*
Galitzenstein, blau—*Cupr. sulfuric.*
" weiss—*Zinc. sulfuric.*
Galläpfel—*Gallae.*
Gallenkraut—*Herb. gratiolae.*
Gallenpflaster—*Empl. oxycroc.*
Gallentropfen—*Tinct. amar.*
Gallenwurzel—*Rad. jalapae.*
Gallerjahn—*Rad. galangae*, auch *Rad. valerianae.*
Gallipot—*Resina pini burgund.*
Galmei—*Lap. calamin. praep.*
Galmeipflaster—*Empl. fuscum.*
Galmeisalbe—*Ungt. exsiccans, Ungt. zinci.*
Galoppspiritus—*Liq. ammon. caust.* (!)
Gamander—*Herb. chamaedryos.* (*Herb. veronicae.*)
Gamillen—*Flor. chamomil. vulg.*
Gandelbeere—*Fruct. myrtilli.*
Garbe—*Fruct. carvi.*
Garbenkraut—*Herb. millefolii. Herb. absynthii.*
Garböl—*Ol. carvi.*

Gardebenedictenkraut — *Herb. cardui benedicti.*
Garou, Garu—*Cort. mezerei.*
Gartenkümmel — *Fruct. carvi. Fruct. föniculi.*
Gartenmalven—*Flor. malv. arb.*
Gartenminze—*Herb. menthae crisp.*
Gartenraute—*Herb. rutae grav.*
Gartensafran—*Flor. carthami.*
Garthagel, Gartheil } *Herb. abrotani.*
Gauchheil—*Herb. anagallidis,* (*Herb. veronicae.*)
Gebärmuttertropfen — *Tinct. cinnamomi.*
Gebärmutterwurzel—*Rad. aristoloch. rot.*
Gebergsthee—*Herb. marrubii.*
Geblüthsthee—*Spec. lignorum.*
Gebrannter Alaun—*Alum. dehydratum.*
Gebranntes Elfenbein—*Ebur ustum.*
Gebranntes Hirschhorn—*Calc. phosphoric. crudum.*
Gefrörsalbe—*Ungt. plumbi.*
Gehöröl—*Ol. camphorat. c. ol. cajeputi.*
Geierbalsam—*Ungt. elemi.*
Geigenharz—*Colophonium.*
Geistersalz—*Ammon. carbonic.*
Geistwurzel, heilige—*Rad. angelicae.*
Gelbeapfelsalbe—*Ungt. flav.*
Gelbe Distel—*Herb. galleops. grandifl.*
Gelbe Durchwachssalbe — *Ungt. flavum.*
Gelbes Puder—*Lycopodium.*
Gelbholz—*Lign. citrin.*
Gelber Zug—*Cerat. citrin.*
Gelbingwer—*Rad. curcumac.*
Gelbkraut—*Herb. chelidoniae.*
Gelbroththee—*Herb. rutae.*
Gelbsuchtwurzel, Gelbwurzel } *Rad. curcumae. Rhiz. hydrast. can.*
Gelenköl—*Ol. hyoscyami.*
Gelenkschmiere—*Ungt. rorism. comp.*
Gemsenwurzel—*Rad. arnicae.*
Gengber—*Rhiz. zingib.*
Genist—*Genista tinctoria.*
Genovevabalsam—*Ungt. basilic.*
Gentianwurzel—*Rhiz. gentianae.*
Gerbsäure—*Tannin.*
Gereinigter Weinstein — *Tartar depurat.*
Germänthee—*Spec. laxant. St. Germ.*
Gerstenmehl,präp.—*Farina hordei pp.*
Gesegnete Distel—*Herb. cardui bened.*
Gesundheitskrauter—*Herb. galeopsidis.*
Gesundheitsbalsam, Gesundheitstropfen } *Tinct. benzoes comp., Mixt. oleoso bals., Bals. vitae Hoffm.*
Gesundheitselixir, Gesundheitsessenz } *Elixir ad longam vitam.*
Gesundheitsthee — *Spec. laxant. St. Germ.*
Gewürz, Engl.—*Fruct. amomi.*
Gewürzessig—*Acet. aromat.*
Gewürzkräuter—*Spec. aromat.*
Gewürznäglein—*Caryophylli.*
Gewürznelken—*Caryophylli.*
Gewürzpulver—*Pulv. aromat.*
Gewürzsamen—*Fruct. amomi.*
Gewürztropfen—*Tinct. aromat.*
Gibsjakob—*Oxymel Aeruginis* (*Mel. rosat. c. borace*).
Gichtbalsam—*Linim. saponis.*
Gichtbeeren—*Fruct. ribium nigr.*
Gichtblumen—*Flor. primulae* (*Flor. verbasci*).
Gichtholz—*Lign. guajaci.*
Gichtkörner—*Sem. paeoniac.*
Gichtkraut — *Herb. geranii, Herb. chenopodii.*
Gichtöl—*Ol. camphorat.*
Gichtpflaster—*Empl. fuscum.*
Gichtpillen—*Pil. laxantes.*
Gichtrosensamen—*Sem. paeoniae.*
Gichtrosenwurzel—*Rad. paeoniae.*
Gichtrübe—*Rad. bryoniae.*
Gichtsalbe—*Ungt. rorismar. comp.*
Gichtspähne—*Lign. guajaci rasp.*
Gichtspiritus — *Spir. angel. comp., Linim. saponis.*
Gichtthee — *Herb. chenopod. ambr., Spec. lignorum.*
Gichttropfen — *Tinct. lign. guajaci, Mixt. oleoso bals.*
Gichtwasser—*Linim. saponis.*

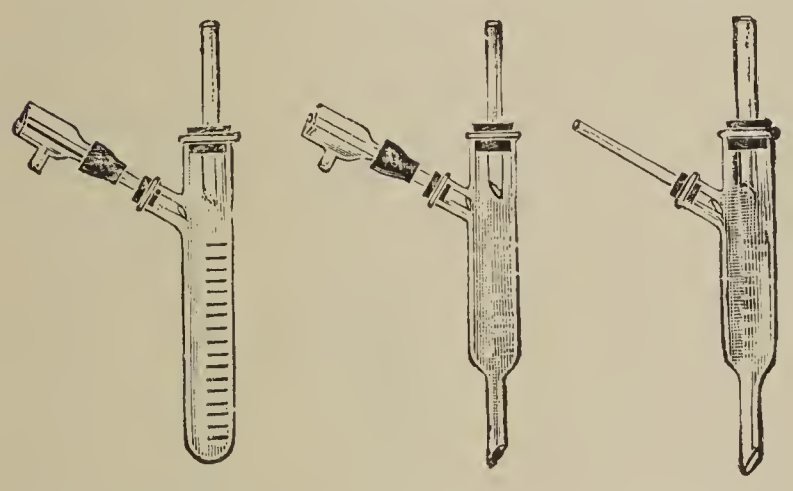
MONTHLY REVIEW.

Pharmaceutical Technique.

Exsiccator according to Prof. Sebelim for Allihn's Sugar-estimation Tubes.—The new exsiccator, as the accompanying figure shows, consists of a cylinder about 24 cm. in height and about 12 cm. in width, which is provided with a contraction half way up from the bottom. This contraction extends so far into the cylinder as to make a ledge for supporting a round plate of porous clay or hard rubber. This plate is filled with round holes of from 10 to 12 mm. in diameter in which the Allihn tubes are placed and which at the same time allow of free circulation in the interior of the exsiccator. The upper edge of the cylinder is plane-ground and provided with a Hempel exsiccator top. The inner curvature in the cover is intended to serve as a receptacle for concentrated sulphuric acid; the bottom of the cylinder is to be covered with calcium chloride or sulphuric acid. Made by Kaehler & Martini, Berlin.



[Ztsch. f. angew. Chem., 1899, No. 34.] *O. Schreiner.*



Receivers for Distillation according to Raabe. — Besides the form already reviewed in this journal, Aug. 1899, p. 353, the receivers shown in the accompaning figure were designed. They are applicable in the distillation of very volatile substances; for details the reader is referred to the above named earlier review. Made by Kaehler & Martini, Berlin.

[Ztsch. f. angew. Chem., 1899, No. 34.] *O. S.*

Stirrer according to Priesemuth.—At the end of a metal or glass rod are fastened radially 5 to 6 wings, with inclined sides. At distances of from 5 to 6 cm. from the lower group there is fastened another pair of wings, and at the same distance above this one a third pair. The inclined planes of these last two pairs are, however, just the opposite from the inclination of the wings of the lower group. The result is, that when this stirrer is rotated by means of a small turbine, or hot-air motor, a strong disturbance is caused in the liquid, which is increased by the upper wingpairs, for operating in the opposite direction from the lower group, they tend to prevent the centrifugal motion of the liquid. Made by Kaehler & Martini, Berlin.

[Ztsch. f. angew. Chem., 1899, No. 34.] *O. S.*

Disinfecting by means of Formaldehyde.—A. Schmidt of Berlin, Germany, has designed a lamp, which makes the disinfection of inclosed spaces of considerable size, such as sick-rooms, stables, etc. by formaldehyde gas or vapor, possible. This lamp will produce economically a large yield of a permanent formaldehyde gas or vapor by a method which is so simple that it can be practiced by persons of ordinary intelligence and which is practi-

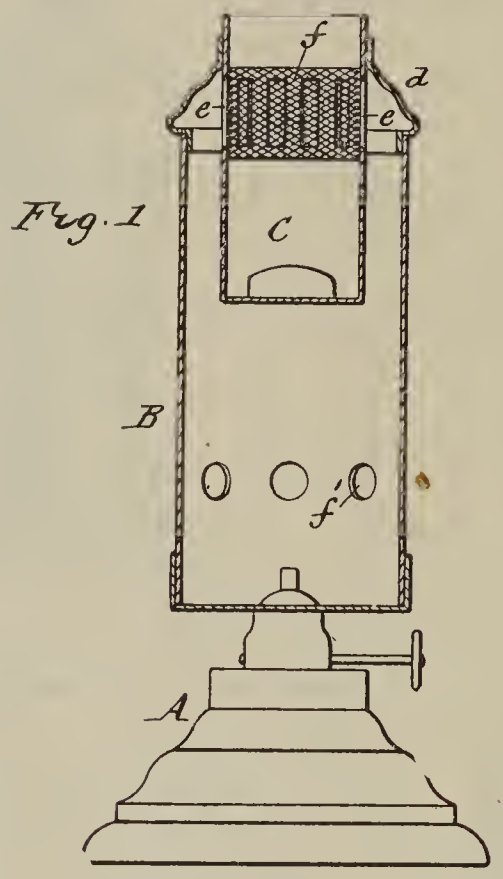


Fig. 1.

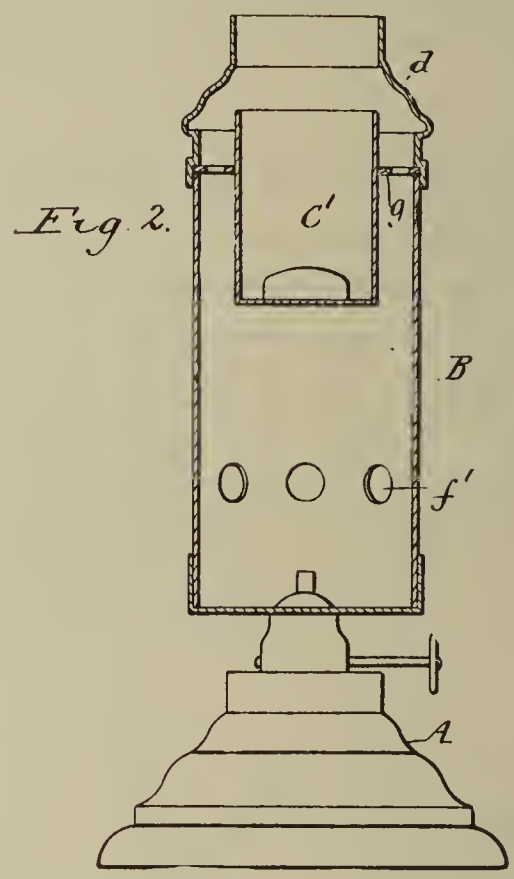


Fig. 2.

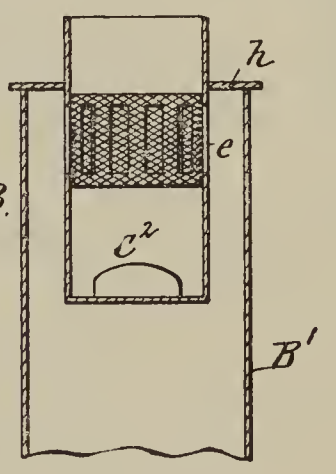


Fig. 3.

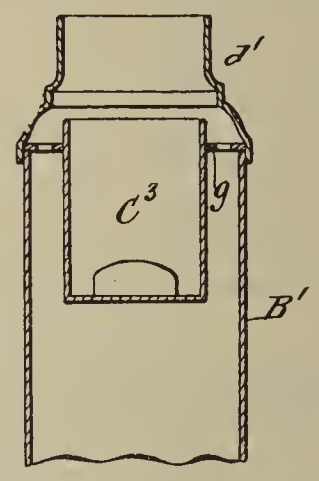


Fig. 4.

cally efficient for destroying the disease germs existing in inclosures of considerable size, such as sick-rooms, stables, etc. When dry para-formaldehyde, or other polymeric formaldehyde—for instance, trioxymethylene—is heated, it dissociates to formaldehyde. On cooling, the vapors again condense to the polymeric formaldehyde. In order to prevent the repolymerization of the formaldehyde vapors generated from paraformaldehyde and in order to produce an efficient sterilizing action, it is necessary to combine with the formaldehyde vapor a certain amount of water in the form of vapor. This

is accomplished by using the products of the combustion of the alcohol or other fuel which produces products of combustion rich in water vapor, in the lamp.

In the accompanying drawing fig. 1 is a sectional elevation of the lamp. Fig. 2, 3, and 4 are vertical sections showing modifications of the apparatus. Like letters of reference refer to like parts in the several figures. In fig. 1 *A* represents a lamp and *B* an upright chimney or cylinder, mounted on the same. *C* represents the receptacle for the paraldehyde. This receptacle is closed at the bottom and sides, except near the top, where it is provided with an annular row of openings *e*. These openings are covered with fine wire gauze. The chimney is also provided with holes at *f* for the admission of air to the lamp. The paraformaldehyde in the form of highly compressed tablets is put into *c*. The vapors of formaldehyde rising from the receptacle encounter the hot and moist products of combustion which pass into the upper portion of the receptacle from the chimney through the openings *e*, and this mixture of formaldehyde vapor, water vapor and carbon dioxide passes out into the room. In the construction of the apparatus represented in fig. 2 the receptacle C^1 is suspended within the upper portion of the chimney by a horizontal flange *g*, which is perforated for the passage of the products of combustion. The upper edge of the receptacle stands at a certain distance below the top *d* of the chimney, so that this top deflects the ascending products of combustion inwardly over the receptacle and causes them to mingle with the vapor rising therefrom.

In the construction represented in fig. 3 the receptacle C^2 is supported on the lamp or gas chimney B^1 by an annular flange *h*, and the products of combustion enter the upper portion of the receptacle through the openings *e*, as in the construction represented in fig. 1.

In the construction represented in fig. 4 the receptacle C^3 is supported on the lamp or gas chimney B^1 by a perforated flange *g* as in fig. 2, and the receptacle is constructed without openings, and carries an inwardly extending top or hood d^1 which directs the products of combustion over the receptacle. [Specifications U. S. Patent No. 630,782.] *O. S.*

Chemistry.

A New Volumetric Method for Magnesium.—R. K. Meade, comments upon the fact that no satisfactory volumetric method for the estimation of magnesium has been devised and communicates a process which as regards accuracy compared well with the gravimetric method and which permitted an estimation to be completed within three-quarters of an hour. The method depends upon the precipitation of magnesia as ammonium-magnesium arsenate, the reduction of the arsenic in this precipitate to the arsenous condition by means of potassium iodide in an acid solution according to the reaction:

$As_2O_5 + 4KI + 4HCl = As_2O_3 + 4KCl + 2H_2O + 2I_2$., and the titration of the liberated iodine with thiosulphate.

The method is carried out as follows: Pour the solution which should not contain too great an excess of ammonium chloride or ammonium oxalate, into a large flask of sufficient capacity. Add one-third the volume of solution of strong ammonia and 50 cc. of 10 p. c. solution of sodium arsenate. Cork up tightly and shake vigorously for ten minutes. Allow the precipitate to settle somewhat, and wash with a mixture of three parts of water and one part of ammonia water, until the washings cease to react for arsenic. Avoid using an excess of the washing fluid, however. Dissolve the precipitate in dilute hydrochloric acid, allowing the acid solution to run into the flask in which the precipitation was made, and wash the filter paper with dilute acid, until the washings and solution measure 75 to 100 cc. Cool, if not already so and add 3—5 gm. of potassium iodide, free from iodate; allow the solution to stand a few minutes and titrate the liberated iodine with thiosulphate in the usual way. 1 cc. N/10 thiosulphate equals 0.002013 gm. MgO. [J. Am. Chem. Soc. 21, p. 747.] *W. A. P.*

Detection and Determination of Formaldehyde.—According to C. Neuberg, para-dihydrazinodiphenyl unites with formaldehyde to form a characteristic hydrazone, which answers for qualitative as well as quantitative estimation. Aqueous solutions of the chlor-hydrate of this hydrazin base give with formaldehyde in dilute solutions after standing a few minutes an immediate flocculent yellow precipitate when warmed to 50—60° C. The composition of this precipitate is as follows: $\begin{matrix} C_6H_4.HN.N:CH_2 \\ | \\ C_6H_4.HN.N:CH_2. \end{matrix}$ This compound, which, when allowed to separate out slowly, forms fine crystals. They are insoluble in the aliphatic alcohols, benzene, ether, chloroform and other organic solvents. They melt at 220° C., the melting point, however, wanting in sharpness. Formaldehyde solutions 1:5000, when warmed with a few drops of the hydrochlorid of dihydrazinodiphenyl, are colored momentarily yellow until the separation of the crystalline precipitate. In dilutions of 1:8000 the test becomes unreliable. Should other aldehydes or ketones be present, double the volume of alcohol is added, whereby their compounds with diphenylendihydrazin are held in solution. If there be but traces of formaldehyde present in solution with excess of other aldehydes or ketones, the hydrazine precipitate is then boiled repeatedly with strong alcohol until the residue is of a pure yellow color.

[Ber. d. Deutsch. Chem. Ges., 32, p. 1961.] *V. C.*

Hydramin.—A new photographic developer prepared by Mess. Lumière and Seyewetz of Lyon. It consists of a molecular combination of hydroquinone, $C_6H_4.OH.OH = 1:4$, and paraphenyldiamin, $C_6H_4.NH_2.NH_2 = 1:4$,

which crystallizes in white scales melting at 194°—195° C., soluble in cold water to the extent of 1 in 500. Hydramin is but very slightly soluble in alcohol and exceedingly soluble in alkalies and acids. The presence of sulphite prevents browning of its alkaline solution in the air, while the addition of ferric chlorid causes a deep blue coloration which soon changes to a red.

The developing solution is made as follows: hydramin, 5 grm.; caustic lithia, 3 grm.; anhydrous sodium sulphite, 16 gm.; water, 100 cc. This developer is colorless, stable and gives sharp shadowed negatives.

[Pharm. Centrh., 40, p. 493.] *V. C.*

Further Work upon the Estimation of Alkaloids and the Assay of Alkaloidical Drugs.—By H. M. Gordin and A. B. Prescott.[1] In a paper presented by us a year ago,[2] we offered a method for the volumetric estimation of alkaloids by the use of standard solution of iodine. We then reported upon the method for use with six alkaloids, morphine, atropine, strychnine, brucine, caffeine, and aconitine. And we had succeeded in making the method a trustworthy and convenient one for five of these alkaloids,[3] all those just named except aconitine. In each instance we had obtained in purity the higher periodide of the alkaloid, the one formed in our method of estimation, and had found the analysis of this periodide to give a molecular factor which was closely verified when put to the volumetric test. A volumetric method of course requires that the alkaloid be first brought into aqueous solution, nearly free from other matters. In the case of opium we had reported a method of extraction from the crude drug, together with the volumetric estimation of the morphine, in one assay process, having advantages of a nearer approach to complete recovery of the morphine content, and of promptness of operation. As to methods of extraction for other crude drugs, we mentioned a year ago that we had work in hand, and said that it was too early, as yet, to make definite proposals for pharmacopœial adoption of the method for any of the alkaloidal drugs or galenicals.

During the past year we have worked upon the application of the iodometric method to five more alkaloids, emetine, hydrastine, berberine, colchicine, and quinine, and have already made the method entirely satisfactory for emetine, berberine and hydrastine. For berberine the estimation, though iodometric in one sense, rests on the formation of an insoluble hydriodide instead of a periodide, and requires volumetric solutions different from those used with all the other alkaloids. We have also elaborated the volumetric process to the separation of strychnine from brucine. In the case of col-

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1 In the work of Research Committee D., Section 2, Committee of Revision and Publication of the Pharmacopœia of the United States, 1890—1900.

2 "Certain Alkoloidal Periodides and the Volumetric Estimation of Alkaloids as Higher Periodides." A. B. Prescott and H. M. Gordin, Proc. Am. Phar. Assoc., 1898, p. 255.

3 For caffeine the method had been completed, with analysis of the periodide and other perhalides, by Gomberg, in this Laboratory, in 1896.

chicine, the formation of a uniform periodide presented difficulties, but we hope to return to the investigation of this alkaloid, as well as to that of aconitine. Respecting quinine, we have in hand work upon its separation, but we are not confident of making any improvement over existing methods.

To work out a general method of analytical extraction of alkaloids from crude drugs, bringing the alkaloids of drugs completely into solution suitable for almost any volumetric or gravimetric estimation, has been a problem undertaken in our work during the past year. We were invited to this problem, in fact, by the unexpected advantages of the procedure we had adopted for extraction in opium assay, and by a desire to adapt the same procedure to other and ordinary alkaloidal drugs. The opium assay process we have materially improved this year. In result we now desire to offer such a method for the extraction of alkaloids in process of estimation, especially for use in volumetric estimation, whether such volumetric way be on the iodometric plan, or upon the alkalimetric plan, the latter having received a quite favorable consideration at the hands of analysts.

In this paper we beg leave to give some further experimental data, upon which we have based the methods which we propose for alkaloidal assay, and therewith very brief discussion of the claims of these methods in comparison with others.

In an accompanying paper we give, in short compass, the bare directions for assay, namely, for alkaloidal extraction in general, for iodometric estimation in general, with a list of iodine factors for alkaloids, the assay of nux vomica, of ipecacuanha, and opium assay.

We give the simple directions for assays, disencumbered by reports of our experimental work, for the easier use of analysts while under the working pressure of industrial laboratories, where all devices for the valuation of drugs ought, if possible, to come to trial before adoption into the text of a national pharmacopœia. But whether for consideration by any national committee of revision, or for the attention of individual chemists anywhere, it is our desire to give, if we can, some addition to the resources of analysts, well knowing how portentious are the demands now made, both by legal enactments and by commercial contracts, upon the faithful services of the devoted analyst, who is not seldom called upon to do without delay more than all the world of research has ever done before him.

The Periodides of Emetine. See p. 120; from Am. Journ. Ph., 71, p. 14.

Periodides of Hydrastine and the *Iodometric Estimation of Hydrastine.* See p. 313; from Am. Journ. Ph. 71. p. 257.

Respecting the Opium Assay. See p. 244.

Hot Extraction instead of Cold Percolation in the Assay of Opium. — Instead of extracting the morphine from the opium by cold percolation with an alcohol-chloroform mixture as here described, hot extraction with

chloroform alone in a suitable extraction apparatus may be used. Though morphine is very slightly soluble in cold chloroform, it dissolves much more easily on the application of heat. This has been shown by Florio, and verified by us. The most suitable apparatus for this case is undoubtedly that of Dunstan and Short, as it can be used for cold percolation as well as for hot extraction. If this method of extraction be preferred, the opium mixed with the sodium chloride is placed in this apparatus and exhausted by cold percolation with benzol, as described above. A current of dry air is then passed through the tube till the powder becomes dry, which can be seen by the light color that the powder assumes, or by the fact that the tube ceases to feel colder than the surrounding medium, the apparatus then connected with a small round-bottomed flask containing 40 to 50 cc. of chloroform, and the powder extracted on a water-bath till exhaustion is complete. Care should be taken that only a small surface of the bottom of the flask be heated, and that a layer of solvent be constantly on top of the powder. Most of the chloroform can be then distilled off and the balance evaporated from a shallow vessel. The residue in the evaporating dish and that left in the flask are then taken up with acid (standardized if an alkalimetric assay is intended) and the operation finished as above. If only an iodometric assay is desired the acid solution is made up to a given volume, shaken with a small quantity of calcium hydrate, and the filtered half of the solution treated with iodine as above. In this case only 1 gm. of opium need be used.

Comparative Merits of Iodometric Estimation.—Of the various devices which have been resorted to in the estimation of alkaloids, two general methods are especially worthy of regard because of their directness and simplicity, namely the gravimetric method and the alkalimetric method.

The gravimetric method, undertaking chiefly by solvents to separate the alkaloid and weigh it uncombined, with the advantage of extreme simplicity of principle, has the disadvantage of depending upon solvents for separation from non-alkaloidal matters, a separation lacking in exactness and requiring repetitions which take up much time. The result is apt to be a compromise between the loss of alkaloid left behind in the solutions, and the gain in weight by impurity in the final product.

The alkalimetric method is certainly based upon the best of principles, and so far as it can be readily executed with exactness, it should have the preference. Unfortunately, the combination of alkaloids with acids is not a reaction quickly and sharply defined. The presence of ammonia must be excluded. The end reaction depends so much upon the choice and quality of the indicator, the personal equation of the operator and the light where the observation is made, that results are often in doubt, or ought to be.

The iodometric method, in the instances of alkaloids which form distinct

higher periodides insoluble in excess of the reagent, has claims as follows: It is based upon fixed chemical proportions deduced from analyses of the products of the reaction; the end-reaction is very sharp indeed; the actual exactness of the estimation has been verified; and the volumetric reagents required are among those most commonly in use and of earliest introduction into the pharmacopœias. The estimation is done in an acid solution, and ammonia or other alkali does not interfere.

[Read at the Put-in-Bay meeting of the A. Ph. A.] *A. B. P.*

Botany and Pharmacognosy.

Anhalonium Lewinii.—On p. 359 a statement occurs with reference to the introduction of this drug that may be misleading. In order to avoid misunderstanding the statement should be added that Dr. Lewin described the drug and its effect (Therapeutic Gazette, 12, p. 231) as early as 1888. Messrs. Parke, Davis & Co. had obtained "muscale buttons" from Mexico and supplied Dr. Lewin on his visit to this country with the necessary material for investigation. This firm, therefore, should have the credit for thus early introducing this drug. Further information was published in the Therapeutic Gazette in September 1895 and February 1896. A "working bulletin" on the subject (No. 4) was published by the firm more than two years ago. *E. K.*

Horse Nettle, European Bind Weed and Ground Burnut.—Of the many problems connected with the distribution of plants, none are more interesting than the rapid spread of foreign weeds. Some of these plants have been known for many years over limited areas, but their general distribution did not take place until acclimatization seems to have occurred. The record of sand brier or horse nettle (*Solanum Carolinense*) forms an interesting chapter in the migration of perennial plants from one part of the country to another. It is much easier for an annual to become acclimated than a perennial. Throughout the Mississippi valley several tropical plants have become thoroughly naturalized, as blites (*Amaranthus retroflexus*, *A. albus* and *A. spinosa*), Indian mallow (*Abutilon Avicennae*) and mallow (*Sida spinosa*). Within the memory of the present generation Indian mallow has been naturalized in western Wisconsin; Mexican Poppy (*Argemone Mexicana*), in a comparatively short time has found its way into Kansas, Iowa, and Illinois; balloon vine (*Cardiospermum halicacabum*) of the southwest is common opposite St. Louis, in Illinois.

With these annuals, it is only essential that they mature their seed, but with perennials they must not only mature their seed, but the plant must be able to survive the winter. Those who hold that perennials cannot be acclimated will find an excellent exception in horse nettle (*Solanum Caro-*

Fig. 1. Horse Nettle, (*Solanum Carolinense*) showing the flowers at the upper end of the plant, the spiny stem and mid-rib of the leaf and a cluster of berries with seeds to the right in lower part of figure. (Original drawn by Miss King.)

Fig. 5. European Bind-weed. (*Convolvulus arvensis*, showing the general habit of the plant, the flowers and fruit. (Original drawn by Miss King.)

linense). Darlington, in his "Flora Cestrica", makes the statement that it was introduced by the late Humphrey Marshall into his botanical garden at Marshalltown. Beck, in 1883 gave its distribution as Pennsylvania to Carolina, west to Mississippi. In the second edition of Gray's Manual, Connecticut is included; it is also included in the fifth edition, and in the "Synoptical Flora" it is said to occur from Connecticut to Illinois and southward. Dr. Eaton, however, shortly before his death, wrote to me that he had not seen it, and there is no record of its occurrence in that state, except the specimens found by Dr. Robbins.

That the weed is still spreading in West Virginia is indicated by Millspaugh in his bulletin on West Virginia weeds. Brendel found it native in Peoria, Illinois, in 1852: it is mentioned as occurring in Iowa and Nebraska in the catalogues of Arthur (1876) and Aughey (1875), but probably in this state only along the southern border, and at Keokuk west to Fremont county. From 1888 to 1898 it has been received from many different sections of the state, as in Greene, Story, Fayette, and other counties, and in many places throughout southern and central Iowa. Evidently this weed has migrated northward from 50 to 100 miles during the last quarter of a century.

The horse nettle is native to southeastern United States, as its specific name indicates, but is now found in nearly all the states east of the Missouri river, and is slowly increasing its territory.

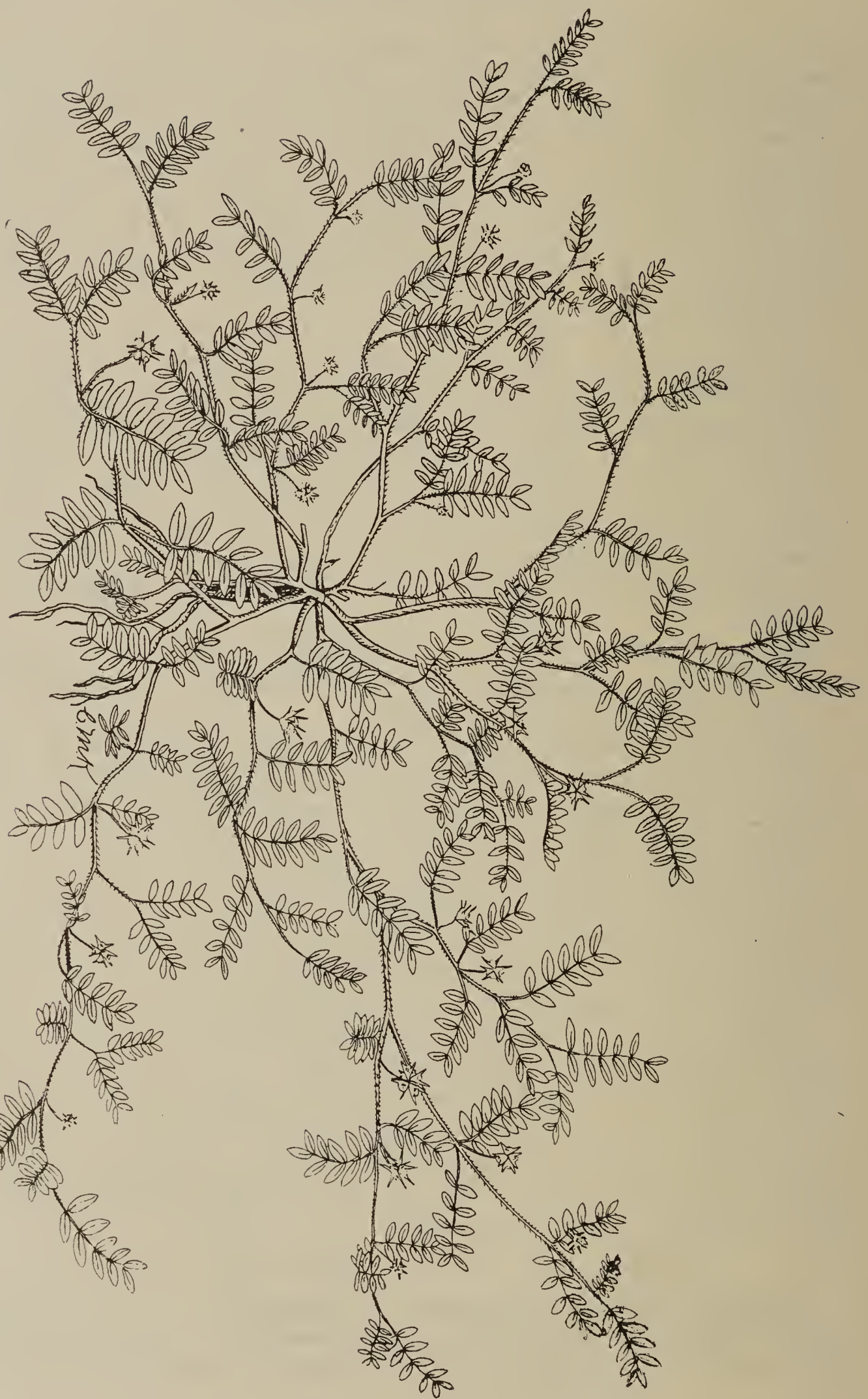
The European bind weed (*Convolvulus arvensis*) according to Dr. Gray in his "Synoptical Flora of North America" is said to be naturalized from Europe, and Watson and Coulter in the sixth edition of Gray's Manual give its distribution as "old fields, North Atlantic states."

During recent years this weed has become widely scattered in some places in Missouri, especially near St. Louis. It is also quite common in some places in Kansas and Illinois. In Iowa it seems to occur not only in the eastern but in the central and western portions of the state and probably before long will be found in many other parts of the state.

Another recent introduction into the state is what is known as the Ground Burnut (*Tribulus terrestris*). It occurs along the Atlantic sea board and in Nebraska, and has recently been introduced into Iowa. Last summer while collecting with Mr. Ferdinand Reppert on Muscatine Island, a considerable quantity was found near Fruitland, where much of the material had produced seeds. This weed is likely to prove quite as troublesome in Muscatine Island as the sand bur.

[Bulletin No. 42, Iowa Agr. Expt. St.] *L. H. Pammel.*

Scopola as a Practical Equivalent of Belladonna. — S. W. Williams replies to Query 5, "Is it proper to make belladonna preparations from Scopola in the face of the present U. S. P. definition? Should the U. S. P.



change its definition so as to sanction the use of this rhizome as an alternative?"

"That we have, in the rhizome of *Scopola Carniolica*, a practical equivalent of the root of *Atropa Belladonna*, chemically, pharmaceutically and physiologically considered, was fairly demonstrated ten years ago by disinterested investigators of admittedly high standing. Extensive work on Scopola was conducted by the Research Laboratory of the Pharmaceutical Society of Great Britain, the results of which were published in the Pharmaceutical Journal and Transactions, December 14, 1889. To briefly summarize these, W. R. Dunstan and A. E. Chaston found the alkaloid to be hyoscyamine, with too small a proportion of hyoscine (scopolamine)[1] to admit of estimation in the quantity of drug examined. A further resemblance to belladonna was found in the presence of cholesterin and a fluorescent principle.

"F. Ransom, F. C. S., found scopola specially adapted for standardized preparations.[2] Dr. Lauder Brunton and Sir Dyce Duckworth, found[3] by careful clinical tests with standardized preparations of the two drugs, that scopola was fully equal if not actually superior to belladonna, when employed in cases where the use of the latter drug was indicated. E. M. Holmes, established[4] the botanical position of scopola as a link between the genera hyoscyamus and atropa. Prof. Thomas Greenish found[5] "a close alliance in anatomical structure between the rhizome of *Scopola Carniolica* and the root of *Atropa belladonna*." Nearly a decade has elapsed and, so far as the writer knows, these reports have stood unquestioned.

"Regarding the identity of the alkaloid of belladonna, experiments[6] were made in the Chemische Fabrik auf Aktien (formerly the Schering Laboratories) "the results of which led to the announcement that neither belladonna root nor hyoscyamus seeds contain *atropine* ready-formed, but instead of this only *hyoscyamine*, the latter being converted wholly or in part into atropine during the process of extraction. At the instance of this establishment, Prof. Will has reviewed the whole subject, and finds the statement to be correct in every particular."

"Those who attach great importance to botanical relationship should consider how close, in their therapeutic action, are belladonna and hyoscyamus, the extremes, between which we find scopola. Dr. Wood, in his Treatise on Therapeutics (1894, p. 254) says: "Hyoscyamus may be used

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1 Prof. Schmidt found this secondary alkaloid to be scopolamine, which he has proven to be identical with hyoscine. Archiv. der Pharmacie, 1892; Chemist and Druggist, May 28, 1892, p. 771.
2 Ph. Journ. & Trans. 1889, p. 461.
3 Ph. Journ. & Trans. 1889, p. 461 and 466–8.
4 Ph. Journ. & Trans. 1889, p. 470.
5 Ph. Journ. & Trans. 1889, p. 472.
6 Proceedings A. Ph. A. 1889, p. 441.

to fulfill any of the indications for which belladonna is employed." Dr. Hare, in his "Practical Therapeutics" (1898, p. 224) says, "Hyoscyamus is used in every condition indicating the employment of belladonna." Dr. Butler, in his Text Book of Materia Medica and Pharmacology (1896, p. 453), says: "Hyoscyamus may be used for the same purposes as belladonna." Dr. Ringer, in his Hand book of Therapeutics, (1897, p. 546) says: "Hyoscyamine, as has been said, is isomeric with atropine; the two are very similar, if not identical in their mode of action."

"In 1890, the writer presented to this Association figures showing in detail the weekly records of six months' working of scopola. The average yield of extract with 80 per cent. alcohol was 28⅓ per cent.; the average percentage of alkaloid in extract 2.35 per cent., and the average strength of 33,150 pounds of the rhizome 0.59 per cent. alkaloid. These results represent twenty-seven operations. The lowest yield of extract was 22 per cent., assaying 2.5 per cent. alkaloid; the highest yield was 28 per cent. extract, assaying 2.11 per cent. alkaloid. These extremes of variation show a remarkable uniformity in the strength of the drug itself. As compared with work on the root of atropa belladonna, the percentage of alkaloid is somewhat higher, being in about the proportion of 0.58 for scopola as against 0.50 for belladonna.[7] This comparative uniformity in content of active principle is a most important feature. The root of atropa belladonna has been shown by the results of different analysts to vary from 0.22 to 0.75,[8] and from 0.3 to 0.8,[9] showing a variation of about 200 per cent.

"Prof. W. A. Puckner[10] recently reported assays of belladonna leaves, all samples being purchased as the best obtainable, which show a variation of from 0.01 to 0.52 per cent. alkaloid, the stronger being 5000 per cent. higher than the weaker.

"In writing on the leaf and root of atropa belladonna, Dr. E. K. Squibb,[11] many years ago, claimed the latter to be much superior and advised dropping the former. This advice holds good to-day.

"As to the suggestion to change the pharmacopœial definition so as to sanction the use of scopola as an alternative, there seems to be no practical objection. A pharmacopœial title does not assume to botanical or scientific accuracy, as shown in the case of *Rhus toxicodendron* and *Prunus Virginiana*. A proposition somewhat similar has been made in reference to aloes by the A. Ph. A. Committee of Revision, it being advised to admit

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[7] Two samples of scopola reported in connection with the work of the London Research Laboratory, referred to, assayed 0.43 and 0.51, and are compared with assays of belladonna root previously made by the same chemists, which showed 0.35, 0.38 and 0.36 per cent. alkaloid.

[8] Simonson. Proceedings A. Ph. A., 1889, p. 120.

[9] Lyon's "Assay of Drugs," 1899, p. 108. This authority gives 0.55 per cent. alkaloid as the average for belladonna root.

[10] Pharm. Review, 1898, p. 324. Druggists Circular, Dec. 1898, p. 295.

[11] Ephemeris. Vol. II (1884–85), p. 853.

under the common title "aloes" the drug as obtained from different plants and to require an aloin standard. In the Japanese Pharmacopœia scopola is official and atropa belladonna is allowed to be used as an equivalent, the latter not being given a title of its own. This is a parallel case, except that the position of the two drugs is reversed, scopola[12] in this case having the preference.

"The recognition of scopola on its merits and the dropping of belladonna leaves on account of relative inferiority would seem a very practical and desirable change. Available supply and peculiar adaptability for standardization are points which cannot be ignored in taking a practical view of the question."

Then follows a lengthy discussion of the "ethics of the case" which throws some interesting side lights on the absurdities of socalled ethics.

[Read at the Put-in-Bay meeting of the A. Ph. A.] *E. K.*

The Introduction of Scopola to the U. S. P. — H. H. Rusby likewise replies to the above query.

"It appears that the Pharmacopœia is quite ignored in the use and manufacture of belladonna plasters, except that an official plaster is offered for any such as may desire it and as a mere matter of nominal and formal compliance. In other words, the official plaster, not being acceptable, is not generally offered or employed. It appears further that various grades or degrees are recognized in the violation of the code, differences of opinion existing as to whether the use of scopola, or that of belladonna root, is the more reprehensible. The manufacturers are thus anxious for the Pharmacopœia to amend its provisions and to declare what drug shall henceforth be used for this purpose. Inasmuch as such a change will remove any ethical ban which now exists against either article, the inquiry by the Pharmacopœia Committee becomes one for determining which article is the better for the purpose, or whether both are equally good. An investigation being thus instituted, it can with equal convenience be extended to all the other preparations and uses of the two drugs."

Without discrediting in the least the value of information supplied by manufacturers the writer points to the desirability of a totally disinterested examination of this problem. The questions which present themselves as requiring solution are as follows:

"1. What are the alkaloids respectively of belladonna leaf and root and of scopola rhizome as they are offered in the market? It is not necessary for the present purpose to inquire what these alkaloids may be in the living plants.

"2. How do these alkaloids vary in character and amount in different

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[12] Dr. Holmes (Ph. Journ. & Trans., 1889, p. 471) notes that the differences between *Scopola carniolica* and *Scopola Japonica* are very slight.

forms of the drug as to age, size, processes by which cured and other similar conditions?

"3. What changes do these alkaloids undergo in the ordinary processes of manufacturing the different preparations? Does the extraction change hyoscyamine to atropine, or is there any change resulting in the production of or destruction of scopolamine?* Similarly, what change is effected in these alkaloids during the time that a plaster is lying in contact with the body, exposed to its heat and secretions, or while lying in the gastro-intestinal canal, or after absorption into the blood? That is, do such changes occur that when the drug comes to act upon the system or upon certain parts of it, the effects are the same, no matter which alkaloid was originally introduced?

"4. How far does scopolamine differ from either or both of the others? How much of it is there in scopola rhizome, and is there any of it in belladonna, root or leaves?

"5. What are the conditions as to market supply of the several drugs in regard to extent and price?"

The present status of knowledge on these subjects is then reviewed and the writer concludes that if "the two drugs were found practically identical in all regards, not the slightest essential impropriety, in spite of some incongruity, would be involved in defining 'Belladonna' as 'the root of *Atropa belladonna*, or the rhizome of *Scopola Carniolica*.'

Attention is called "to this subject as evidence of the necessity of introducing the study of the physiological action of drugs as a department of purely pharmaceutical research, and also as enforcing the argument made in the address of the chairman in favor of a highly scientific character in the work of our Association."

In closing, the author pleads more especially with our large manufacturing chemists, for the use of the correct name *Scopola Corniolica* Jacq. as displacing the frequently used generic synonym *Scopolia* (which refers to an absolutely different plant-genus) and the specific synonym *atropoides*, which violates all the generally accepted rules which it is the duty of scientific people to observe."

[Read at the Put-in-Bay meeting of the A. Ph. A.] *E. K.*

Practical Pharmacy and New Remedies.

The Assay of Hyosciamus.—W. A. Puckner, referring to a proposed modification of the Keller assay method (Pharm. Review, 1898, vol. 16, p. 180) remarks that while the method thus modified seemed eminently adapted for the assay of henbane, adverse criticism of the original method made it

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*Throughout this paper, the term "scopolamine" is regarded as the equivalent, for all practical purposes, of hyoscine, of which the former alkaloid constitutes the principal part.

desirable to compare the results yielded by his modified Keller process with those obtained by other methods. A specimen of drug was assayed by the method of Moerk (Am. J. Phar., 1899, vol. 71, p. 105), that of Schwickerath (Pharm. Rund., 1893, vol. 11, 282) slightly modified and his own, using in each case 20 gm. of drug, and all three methods were found to yield identical results. Having demonstrated the reliability of the method, it was adopted for the assay of henbane since determinations by it require less care, time and attention than when other methods are used.

[Read at 47th meeting Am. Pharm. Ass.] *W. A. P.*

Methyl Alcohol as a Menstruum.—Wilbur L. Scoville remarks that while none will deny the poisonous properties of ordinary wood alcohol, it is also well known that it contains foreign bodies in considerable proportions and that to these the toxic effects may be due, and that, could it once be proven satisfactorily that methyl alcohol in itself is no more toxic than ethyl alcohol an increased demand would stimulate the manufacture of a pure article at a low cost, such an article being adapted to many uses.

Experiments regarding the effect of purified methyl alcohol when taken internally are reported. H. D. Abbott compared the effects of equal doses of methyl and ethyl alcohol and found that the effects of methyl alcohol appeared the more quickly and were more transient, passing off in a very short time and leaving no depression. The exhilarant action of ethyl alcohol appeared more gradually, was more persistent, and was succeeded by a slight depression. This agrees with the experience of others but is believed to be more conclusive since Mr. Abbott is not in the habit of using alcoholic beverages, even occasionally.

An extended series of experiments carried out by H. D. Abbott and F. A. Merriam under the author's direction, regarding the relative value of the two alcohols as a menstruum are also reported. The drugs tried were those whose preparations are used externally or such in which the menstruum is not contained in the final product, as in solid extracts. On the whole but slight difference in solvent properties and appearance of the finished product were noted. The surreptitious use of wood alcohol is, however, strongly condemned. [Am. Druggist, 35, p. 131.] *W. A. P.*

Thymol Carbonate.—Intended as an improved substitute for the internal administration of thymol. It is prepared by passing phosgene gas ($COCl_2$) through a 20 percent sodium hydrate solution which contains a calculated quantity of thymol in solution. The almost tasteless, pale yellow, syrupy preparation is insoluble in water, soluble in alcohol and is decomposed by alcoholic sodium hydrate into thymol-sodium and sodium carbonate. Thymol carbonate, owing to the fact that it only undergoes decomposition in the intestines, does not give rise to the usual unpleasant thymol symptoms.

[Pharm. Centrh., 40, p. 403.] *V. C.*

Toluidinblue.—Has been recommended by Veasey in aqueous solution (1:1000) in treatment of acute inflammation of the conjunctiva. The extent of the corneal ulceration can be readily observed since toluidin blue stains the diseased portion and does not affect the healthy parts.

[Pharm. Centrh., 40, p. 403.] *V. C.*

Mutase.—A nutrient preparation, rich in albuminoid content, and of vegetable origin. It forms a yellowish soluble powder of aromatic odor and indifferent taste. Its composition is as follows:—

Albuminoids, 58.27 p. c.; extractives free from nitrogen, 9.65 p. c.; salts, 9.65 p. c.; P_2O_5, 2.5 p. c.; Fe_2O_3, 0.36 p. c.; CaO, 0.81 p. c.; water, 9.58 p. c. Experiments have shown that 80 percent of the nitrogenous matter of mutase are absorbed by the system. [Pharm. Centrh., 40, p. 447.] *V. C.*

Antiarthrin.—A condensation product of tannin and salicin, prepared by Sell and Co., apothecaries in Munich. This product is not purified, contains therefore some unaltered salicin, tannin, also decomposition products as saligenin and glucose. Antiarthrin, in daily doses of 6 to 10 gm., causes immediate diminution of gouty pains, with an increase in the secretion of urine; no side effects are noticeable. This compound should not be admixed with chemicals owing to the presence of some free hydrochloric acid, also it should be given either in pill or powder form owing to the readiness with which it decomposes while in aqueous solution.

[Pharm. Centrh., 40, p. 446.] *V. C.*

Caseon (Plasmon).—A nutritive preparation of milk albuminoids.

Ferratose.—A new liquid preparation of iron.

Zinoleum.—Aceto-zincate of alum.

[Pharm. Centrh., 40, p. 431.] *V. C.*

Some Derivatives of Para-Amidophenol.—The most important derivative of p-amidophenol is the ethyl ether of p-acet-amidophenol or phenacetin $C_6H_4\begin{cases}O{-}C_2H_5\\NH.COCH_3\end{cases}$.

n-methyl-phenacetin is obtained, according to Hinsberg, by the action of methyl iodid on phenacetin sodium, forming colorless crystals which melt at 41° C. and readily dissolve in alcohol and ether.

$$C_6H_4\begin{cases}O{-}C_2H_5\\N{<}\begin{matrix}NA\\COCH_3\end{matrix}\end{cases} + ICH_3 = C_6H_4\begin{cases}O.C_2H_5\\N{<}\begin{matrix}CH_3\\CO.CH_3\end{matrix}\end{cases} + NAI.$$

It is notable that the narcotic action of phenacetin is considerably increased through the introduction of a methyl group in the imido radicle. For example, the administration of 0.45 gm. of phenacetin per kilo weight caused dullness and drowsiness, while a like dose of methyl-phenacetin produced narcosis, lasting several hours, during which a minor operation was

performed without hinderance. As side effect, motor restlessness, was observed during the narcosis.

n-ethyl-phenacetin $\left(C_6H_4\begin{matrix}O—C_2H_5\\ N<C_2H_5\\ \quad\ COCH_3\end{matrix}\right)$ is prepared after the same manner as the above methyl derivative excepting that ethyl iodid replaces methyl iodid. This body melts at 38° C. and is readily soluble in alcohol. Ethyl-phenacetin, according to experiments upon animals, is a stronger narcotic than methyl phenacetin. The administration of 0.45 gm. per kilo caused deep narcosis lasting many hours, without exhibiting any side action. Smaller doses of 1 to 2 gm. given to human beings do not produce any narcotic effect.

n-isopropyl-phenacetin $\left(C_6H_4\begin{matrix}O—C_2H_5\\ \quad\ \cdot\\ N<CH<CH_3\\ \quad\ \quad\ CH_3\\ \quad\ COCH_3\end{matrix}\right)$ forms a thick oily fluid which is soluble in 260 parts of water. Its narcotic properties are considerably less than the lower homologues just cited; this is also true of n-butyl and n-amyl phenacetin. In this series the maximum effect is to be found in the above cited n-ethyl phenacetin.

Acet-amido-phenol-propyl ether $\left(C_6H_4\begin{matrix}O—C_3H_7\\ NH.COCH_3\end{matrix}\right)$ is obtained by heating for several hours upon a water bath a solution of p.-acet-amido-phenol in sodium hydrate with an equivalent amount of propyl iodid and alcohol. The resulting product forms colorless scales which melt at 122° C. and are practically insoluble in water. This compound, like its higher homologues, is more feebly antipyretic than phenacetin. The maximum of activity for the homologue oxygen ether derivatives of acet-amido-phenol is possessed by the methyl and ethyl, the methyl derivative being the most active antipyretic, while the ethyl derivative is the strongest narcotic.

[Annalen d. Chemie, 305, p. 276.] *V. C.*

Physiology and Therapeutics.

Liquid Air in Medici e and Surgery.—The subject of liquid air in its application in medicine and surgery has been treated in a dispassionate manner by A. Campbell White in the Medical Record. The general properties of liquid air have already been described in the columns of the Scientific American at considerable length, so that it is not necessary to dwell upon this phase of the subject.

In applying liquid air to the tissues of the body, White has used it in the form of a spray and by means of a swab dipped into the fluid. If a spray of liquid air is applied to the skin, the part at once becomes anæmic and perfectly colorless. If the application is made only for a few seconds, the color as quickly returns and the skin is congested for some minutes there-

after. Within much less than a minute's time, by means of a spray, the part is frozen as hard as ice, but strange to say, in a few minutes circulation returns without any injury to the tissue, provided the part is not in the end of some extremity. There is no pain in the application excepting at the very beginning, but there is a slight burning or tingling. It also completely anæsthetizes the part to which it is applied without freezing it solid. White has tried liquid air as a local anæsthetic in a number of cases with invariable success. It has one important advantage: that is the absence of hemorrhages during the operation, enabling the operator to apply the dressing before any hemorrhage sets in, the dressing then being sufficient to stop any oozing. White has found the use of liquid air beneficial in the local treatment of ulcers, etc. He states that an abscess, boil, or carbuncle in the early stages is aborted absolutely with one thorough treatment. If it is more advanced several applications at intervals of twenty-four hours are necessary. Liquid air has also been used with advantage in cases of sciatica, neuralgia, etc. [Sc. Am., 81, p. 83.] *E. K.*

On Digitoxin as the Active Principle of Digitalis. — J. W. England believes that while it is impossible to solve the many perplexing statements made in regard to digitalis, the clear impossibility of digitoxin being the dominating therapeutic principle should be set right by pharmacological data. After critically considering the recent work of Kiliani, Keller and others England continues: "From this it will be seen how hopelessly at variance the authorities are upon the subject of the actual chemical nature of the proximate principles of digitalis leaves.

There is one phase of the controvery, however, which may be profitably considered. If it be true that digitoxin represents the medicinal virtues of digitalis leaf, it follows that it should give clinically all the therapeutic results yielded by the leaf or its preparations, and as promptly. Further, if this be so, it is apparent, since digitoxin is wholly insoluble in water, that the infusion of the leaf is wholly destitute of the representative principle of the leaf, and consequently of medicinal worth; yet there are physicians who use the infusion of the leaf to the exclusion of its other preparations. Against this fact it is contended (Pharm. Rundschau, 1898, 603 *vide* Am. J. Pharm., 1899, 145) that, while pure digitoxin is insoluble in water, yet from the infusion of digitalis considerable quantities are obtainable, and in explanation of this seeming paradox it is claimed that the other glucosides of the leaf form digitoxin on its digestion with water.*

* In view of the already existing confusion regarding this drug the reviewer begs to make a correction. England correctly quotes the abstract of the Am. J. Phar., 1899, vol. 71, 145 taken from the Geschäfts-Bericht of Caesar & Loretz, 1898, p. 28 through the Phar. Rundschau, the original however reads: "und wenn trotz der Unlöslichkeit des reinen Digitoxins in Wasser auch durch das Infusum den Blättern der grösste Theil ihres natürlichen Digitoxin-Gehaltes entzogen wird, so beruht das nach den Beobachtungen von Dr. C. C. Keller auf der Gegenwart von Extractivstoffen und anderen Digitalis-Glykosiden, welche das Digitoxin in wässeriger Lösung erhalten". See also Pharm. Rev. 16, 435.

But how this makes water-insoluble digitoxin soluble in water is not explained."

The author continues that, without denying that digitoxin may be the most distinctive chemical substance in the leaf, recent experiments of Hoffman and his own pharmacological results make it clear that the entire activity of the drug is not due to digitoxin. The most remarkable fact brought out by Dr. Hoffman was the length of time which elapsed before the physiological effect of digitoxin was manifest. It is concluded that "from a therapeutic point of view, it is clearly impossible to believe that a drug or preparation that yields physiological effects in about thirty to sixty minutes has for its most important constituent a proximate principle, whose physiological effects are not manifested in from six to thirty-six hours. [Am. J. Phar., 71, p. 379.] *W. A. P.*

Tuberculosis Antitoxin. — Maragliano's antitoxic serum for the treatment of tuberculosis (see Merck's Reports 1896, p. 140, 1897, p. 137), appears from all that is now known about it to be decidedly superior to other similar remedies as a means of combating light forms of tuberculosis (see Ulrich, Ueber Maragliano's antituberkulöses Serum, Therap. Monatsh. 1898, p. 547). It has also proved useful for the treatment of those forms of disease which are regarded to be of the same nature as tuberculosis, such as lupus (see Report 1897) and scrophulosis. In the latter case Federici (Gaz. degli ospedali 1898, 6. March) has succeeded by means of daily injections of 1 cc. (m. 16) of serum in effecting an increase of the patient's weight, considerable improvement of his general condition and the complete, or almost complete, disappearance of the tuberculous tumours of the lymphatic glands. It served also to improve incipient diseases of the bone or even to stop their progress.

Although therapeutically important and useful in many respects, Maragliano's method cannot as yet be regarded as ideal, and hence any further work aiming at the discovery of an effective remedy for tuberculosis loses none of its merits. The experiments of Dr. Landmann, the director of my Bacteriological Department (see Hygien. Rundschau 1898, No. 10) appear to embody a step nearer the coveted end. He has succeeded in preparing an extremely active antituberculosis toxin which is free from objectionable features and which is adapted for the treatment of human patients and offers fair prospects for the discovery of a true antitoxin. Particulars of the clinical value of Dr. Landmann's antitoxin will probably be published shortly.

Leprosy-Antitoxin. — This serum, which Merck & Co. undertook to prepare more than a year ago, in order to aid in the development of the serum treatment of leprosy, has been discussed in a new publication by Dr. Grünfeld (of Rostow on the Don), in the Dermatologische Zeitschrift, edited by

Prof. O. Lassar (Berlin 1898, Vol. V, No. 3, p. 358 et seq.) and the Archives russes de Pathologie, de Médicine clinique et de Bactériologie publiées sous la Direction de M. le Prof. Podwyssotzky (St. Petersbourg 1898, Vol. VI, fasc. 3, p. 214). This writer treated a few lepers in the district of the Donian Cosacs and was able to confirm the changes and reactions noted by Buzzi, Carrasquilla and others. As a rule, the injections cause no inconvenience to the lepers and in no case did they give rise to the formation of abscesses. The patients feel very well during the treatment. Soon after the first inoculation the skin was seen to present a checkered appearance whereas previously it had been smooth. A few days later scabs were seen to form over the whole of the surface of the skin, which was quite in accordance with Carrasquilla's description. (See Report 1897, p. 134). It is however quite surprising to note the retrogression of the oedema on the face and the extremities which is clearly shown in the phototypes accompanying the paper. It will be seen that the numerous ulcers which had formed on both hands as well as on the hard and soft palates have healed completely or become cicatrized, and they are shown partly as having decreased in area and to be in course of healing. During the whole period of observation the body did not oscillate to any considerable extent in weight. The dose of the leprosy serum amounted to 2 cc. (m. 32) at the beginning of the treatment and was gradually increased to 9 cc. (f. drs. 2½). This quantity was injected at one operation. Grünfeld's experiments were carried over a period of 6 months, but the results were not published until a few months after, which gave the writer the opportunity of convincing himself that the improved condition of the patients remained stationary. Further experiments with this serum are being carried on at several large leper hospitals. [Merck's Report for the year 1898, p. 133.]

Tetanus Antitoxin.—The views regarding the value of tetanus antitoxin are gradually beginning to assume a clearer aspect. Its clinical value appears now to be a settled matter. This conclusion is supported by a paper from the pen of F. Köhler (Münch. med. Wochenschr. 1898, Nos. 45 and 46), from which it will be seen that the introduction of the serum treatment has led to a distinct improvement of results. This writer, too, arrives at the conclusion that both Tizzoni's and Behring's preparations act equally well, provided they are injected early enough in sufficiently large and repeated doses. This readily explains itself if it be remembered that the application of tetanus antitoxin, though capable of preventing the outbreak of tetanus, has not the power to neutralize the disease when once it has become established. The reason of this is to be looked for in the affinity existing between the nerve cells and tetanus toxin, for it is precisely by these cells that it is fixed. On the other hand the antitoxin can only neutralize the poison circulating in the blood but not the toxin which has already reached the nerve elements and thus become fixed. Proceeding from

this view Roux and Borrel (Annales de l'Institut Pasteur 1898, April) suggest direct injection of antitoxin into the brain. The results of this method cannot be described as generally satisfactory. For whilst Chauffard and Quenie (Presse méd. 1898, No. 5), Garnier (ibid. No. 70) and Ombredanne (ibid. No. 73) have secured favorable results, the cases of C. Bacaloglu (Gaz. des Hopitaux 1898, No. 70), Robert (Presse méd. 1898, No. 72), L. Delmas (ibid. No. 75) and Heckel-Reynes (ibid. No. 74) had a lethal issue. Dural infusion of tetanus antitoxin is therefore also condemned as useless by Blumenthal and P. Jacobi (Berl. klin. Wochenschr. 1898, No. 49) and others (see Semaine méd. 1898, No. 58, p. 471).

Tetanus antitoxin should be dissolved and prescribed in the following manner:

It is dissolved in distilled water which should be boiled and allowed to cool immediately before use. One part of dry serum is dissolved in 10 parts of water. This is most conveniently done by placing the antitoxin in a mortar, adding the requisite quantity of distilled water and, after covering the mortar with a watch-glass, allowing the antitoxin to soak for ½ or ¾ of an hour. The antitoxin is then made to completely dissolve by rubbing with the pestle. If time be very limited the antitoxin is only allowed to soak for a few minutes and is made to dissolve by briskly triturating it. The tetanus-antitoxin should be injected subcutaneously with the aid of a Pravaz syringe having a capacity slightly in excess of that of the ordinary instrument, viz. 5 to 10 cc. (f. drs. 1½—2½). The injections may be made at any part of the body, it should however preferably be made in the vicinity of the wounded parts. The appliances used for the preparation of the solution and for making the injections should previously be rendered aseptic by boiling or heating over a spirit lamp. Chemical antiseptic media, being apt to affect the antitoxin itself, should not be used. On the other hand, it is necessary to allow the objects sterilized by heat to cool completely before bringing the antitoxin in contact with them, since the antitoxin decomposes even at low temperatures. The immunizing power of tetanus-antitoxin, determined in vitro, amounts to 80,000 units per cc., (m. 16) i. e. one cc. of serum or its equivalent, 0.1 grm. (grs. 1⅙) of the dry substance, is capable of completely immunizing 80,000 units. In this connection it should be noted that a toxic unit is the minimum quantity of a filtered culture capable of killing within 4 or 5 days 1 kilo (oz. 33½) of rabbit. An original bottle of 5.0 grm. (grs. 80) of dry substance contains 4,000,000 units and is therefore capable of neutralizing in vitro 4000 cc. (f. oz. 165) of cultured tetanus, assuming the toxic unit to be 0.001 cc. (gr. $\frac{1}{61}$) per kilo of rabbit, as is generally the case with Tizzoni's cultures.

[Report of E. Merck for 1898, p. 136.] *E. K.*

Literary.

Books and Pamphlets Received.

Field Columbian Museum — Chicago. Studies in the Herbarium I: 1. Higinbothamia, a new genus, and other new Dioscoreaceae. 2. New Amaranthaceae. By Dr. Edwin B. Uline. Botanical Series, Vol. I, No. 5. pp. 413—422, with 3 plates. 1899.

R. Gaertner's Verlagsbuchhandlung — Berlin. Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Literatur. Herausgegeben von Dr. Emil Jacobson. 38. Jahrgang. Erstes Halbjahr, erste Hälfte. Mit in den Text gedruckten Illustrationen. 1899.

Lea Brothers & Co.—Philadelphia. Materia Medica, therapeutics, medical pharmacy, prescription-writing and medical Latin. A manual for students and practitioners. By Dr. Wm. Schleif, Instructor in Pharmacy in the University of Pennsylvania. One vol., pp. 354. $1.50.

Laemmert & Co.—Rio de Janeiro. Historia das plantas medicinaes e uteis do Brazil contendo a descripção botanica, cultura, partes usadas, composição chimica, seu emprego em diversas molestias, doses, usos industrias, etc. por Theodoro Peckolt e Gustavo Peckolt. 7° Fasciculo: familia das phytolaccaceas, nyctaginaceas, alismaceas, mesembrianthaceas, portulaccaceas, trapæolaceas, lauraceas, hernandiaceas, berberidaceas, menispermaceas e myristicaceas. pp. 1121—1369. 1899.

Verlag von Julius Springer—Berlin. Die Aetherischen Oele. Von E. Gildmeister und Fr. Hoffmann. Bearbeitet im Auftrage der Firma Schimmel & Co. in Leipzig. Ein Bd., pp. v, 919, mit vier Karten und zahlreichen Abbildungen. 1899.

Verlag von Julius Springer—Berlin. Hager's Handbuch der pharmaceutischen Praxis für Apotheker, Aerzte, Drogisten und Medicinalbeamte. Unter Mitwirkung von Max Arnold—Chemnitz, G. Christ—Berlin, K. Dieterich—Helfenberg, Ed. Gildemeister—Leipzig, P. Janzen—Perleberg, C. Scriba—Darmstadt, vollständig neu bearbeitet und herausgegeben von B. Fischer—Breslau und C. Hartwich—Zürich. Sechste Lieferung: Caroba bis Chinolinum, pp. 657—784, mit zahlreichen in den Text gedruckten Holzschnitten. 1899. Erscheint in höchstens 20 Lieferungen @ M. 2.00.

Author—Ames, Iowa. Anatomical characters of the seeds of Leguminosae, chiefly genera of Gray's Manual. By L. H. Pammel. One vol. Reprinted from the Transactions of the Academy of Sciences of St. Louis, vol. 9, No. 6., pp. 91—263, with tables A to G, and plates VII to XXXV.

Author—New York. Shall Pharmacists become Tradesmen? A Reproduction of a Series of Articles that appeared in the "Weekly Drug News and American Pharmacist." They were written between 1881 and 1885, together with subsequent reviews on the same subject. By George J. Seabury. One vol., pp. 133. 1899.

The Wellcome Chemical Research Laboratories—London.

No. 4. Preparation of acid phenylic salts of dibasic acids. By S. B. Schryver. Pamphlet, pp. 9. Reprinted from the Transactions of the Chemical Society, 1899.

No. 5. A new method for the analysis of commercial phenols. By S. B. Schryver. Pamphlet, pp. 10. Reprinted from the Journal of the Society of Chemical Industry, vol. 18, No. 6.

No. 6. The assay of preparations containing pilocarpine and the characters of pilocarpine nitrate and hydrochloride. By H. A. D. Jowett. Pamphlet. pp. 7. Reprinted from the Pharm. Journ., July 29, 1899.

Author—Chicago. The pharmacy laws and how to become a pharmacist. Suggestions and information to prospective students and apprentices by Oscar Oldberg. Pamphlet, pp. 26.

Reviews.

Anatomical Characters of the Seeds of Leguminosæ. Chiefly Genera of Gray's Manual, by L. H. Pammel. from Transactions of the Academy of Science of St. Louis. Vol. IX. No. 6. St. Louis 1899. Plates 7—35.

The author has given us here the results of a comprehensive anatomical study of the seeds of the genera of the *Leguminosæ* found in the northeastern part of the United States. The results of his work form a very desirable contribution to the anatomy of American plants not only because of the intrinsic scientific value which attaches to the original investigation of any new subject, but because it lies in a part of the field of anatomical study which is very generally neglected.

After a very brief introduction, a couple of pages are devoted to a short resumé of the study of leguminous seeds extending from the time of Marcellus Malpighi (1687) to the year 1897, and this in

turn is followed by about twenty pages devoted to a general discussion of the various tissues found in the field studied. About eighty pages are given to the details of structure of the representatives of the different genera, following this is a key to the genera based upon anatomical characters. A seemingly very complete bibliography is appended in which four hundred and seventy five numbers are listed. Some of the works cited, however, have only the most general bearing upon the subject and might have been omitted without detriment. The text closes with a series of tables intended to illustrate, graphicly, comparative chemical reactions of the various tissues from certain representative genera; and the "relation of the structures of the cells of the cotyledon to germination". Twenty-seven black-and-white plates and two colored ones illustrate the work.

L. S. Cheney.

SYMBOLÆ ANTILLANÆ seu Fundamenta Floræ Indiæ Occidentalis, edidit Ignatius Urban. Volumen I, fasciculus 2. Berlin 1899. Verlag Gebrüder Borntträger. 1899. M. 10.80.

This second fascicle of the interesting flora of the West Indies contains five papers in part or in whole. The first by the editor completes the bibliography begun in the first fascicle (p. 20). The second paper likewise by the editor deals with the natural order *Araliaceæ*. In it four genera and sixteen species are presented, all except the better known ones accompanied by descriptions. Gustavus Lindau is the author of a third paper in which he presents the *Polygonaceæ* with its nine genera, sixty-six species and numerous varieties and forms. One new species, *Coccoloba Harrisii* Lindau, is described. So far as known, evidently the work of all collectors is noted and each specimen reported by field number. The fourth paper is upon the *Asclepiadaceæ* by Rudolphus Schlechter. The order is represented by twenty-one genera and eighty-eight authenticated species, with three questionable species and a few varieties. Two new genera (*Decostelma* with a single species *D. Broadwayi*, and *Tainionema*, to which is referred and old species) and twenty-five other new species, one in the genus *Astephanus*, eighteen in the genus *Metastelma*, two in the genus *Marsdenia*, and four in the genus *Gonobolus* are described. The last paper is by the editor I. Urban and is composed largely of descriptions of a miscellaneous list of new species. Two new genera, *Notodon* (Natural order *Leguminosæ*) and *Hybosperma* (Natural order *Rhamnaceæ*); eighty new species, and about a dozen new varieties and forms are here described. The paper is not concluded.

L. S. Cheney.

SUPPLEMENT.

Scientific Societies.

Officers of the A. Ph. A.—The following is a list of the principal officers elected at the Put-in-Bay meeting: President, A. B. Prescott, Ann Arbor, Mich.; Secretary Chas. Caspari, Jr., Baltimore; Treasurer, S. A. D. Sheppard, Boston.

The chairmen of the three sections are: J. M. Good, St. Louis, of the Commercial Section; F. G. Ryan, Philadelphia, of the Scientific Section; A. B. Lowe, Philadelphia, of the Section on Education and Legislation.

Papers read at the Put-in-Bay Meeting of the A. Ph. A.—The Committee on Practical Pharmacy and Dispensing in addition to its report on the condition of practical dispensing of to-day as compared with twenty and forty years ago, submitted the following papers which were read by title:—

H. W. Preissler: Elastic capsules.

J. M. Dixon: Saw Palmetto.

M. S. Ewing: Practical methods for the modification of cow's milk.

J. F. Patton: The present day drug store.

J. G. Eberle: Economy in the kitchen of pharmacy.

E. P. Ferte: Solution of magnesium citrate.

G. E. Burroughs and H. L. Simpson: Some prescription incompatibilities.

The **Commercial Section** had no programme whatever provided by its officers, neither did any one appear to have any paper to volunteer.

The following papers were presented at the three sessions of the **Scientific Section**:

O. Schreiner and E. Kremers: Nitroso derivatives of caryophyllene and cadinene and their bearing on the characterization and classification of the sesquiterpenes. See Ph. Archives, p. 273.

A. B. Stevens: The deterioration of wild cherry bark with age. See p. 445.

A. Van Zwaluwenburg and J. O. Schlotterbeck: Structure and development of seed of gossypium herbaceum.

——— Structure and development of seed of theobroma cacao.

H. Kraemer: Color standards of powdered drugs.

A. A. Schneider: Identification of powdered drugs by means of their microscopic characteristics.

W. C. Alpers: Odor standards in the U. S. P.

H. Kraemer: Valuation of vegetable foods and drugs.

E. M. Houghton: Is physiological action requisite as a departement of pharmaceutical research.

H. M. Gordin and A. B. Prescott: Further work upon the estimation of alkaloids and the assay of alkaloidal drugs. See p. 465.

———: Directions for certain alkaloidal assay.

A. Zwaluwenburg and M. Gomberg: Does taraxacum officinalis contain an alkaloid?

A. R. L. Dohme and H. Engelhard: The composition of hydrastine.

S. W. Williams: Scopola as a practical equivalent of belladonna. See p. 475.

H. H. Rusby: The introduction of scopola to the U. S. P. See p. 475.

W. A. Puckner: The assay of hyoscyamus. See p. 476.

E. H. Bartley: A scheme for the identification of organic drugs.

J. Feil: A new process for the preparation of spirit of nitrous ether.

At the three sessions of the **Section on Education and Legislation** the following papers were read and discussed:—

H. M. Whitney: The framing of a model pharmacy law.

R. G. Eccles: How can we manage the nostrum evil?

H. B. Mason: A plea for the introduction of doses into the Pharmacopœia of 1900.

Treasurer's Report of the A. Ph. A.

RECEIPTS.

Cash on hand July 1, 1898	$3,198.01
Received from the sale of Certificates	57.50
Received from sale the of Proceedings	47.09
Received from the sale of Badges and Bars	127.45
Received from the sale of National Formulary	503.78
Received from Interest	173.52
" " Ebert Fund.	28.00
" " Rebate on Journal	1.00
Received from Annual Dues	5,410.00
Total	$9,546.35

SUMMARY OF DISBURSEMENTS.

Proceedings	$3,045,16
Stenographer	125.00
Journals for the Reporter on the Progress of Pharmacy	44.46
Salaries	2,500.00
Premium on Treasurer's Bond	25.00
Traveling Expenses	34.38
Section on Scientific Papers	5.60
Section on Education and Legislation	39.54
Section on Commercial Interests	4.40
Committee on Membership.	34.50
Committee on Transportation	24.10
Special Committee on the Status of Pharmacists in the Army and Navy of the United States	111.03
Special Committee on Practical Pharmacy and Dispensing	50.00
Printing and Stationery	244.08
Insurance	15.50
Badges	135.10
General Prizes	150.00
Ebert Prize	28 00
Miscellaneous Expenses	70.28
National Formulary	211.12
Total amount of Disbursements	$6,897.25
Cash on hand July 1, 1899	2,649.10
	$9,546.35

AMOUNT OF THE VARIOUS FUNDS.

Ebert Fund	$ 672.20
Centennial Fund	1,503.05
Life Membership Fund	11,609.18
General Fund	3,000.00

Seventeenth Annual Report of the Committee on Indexing Chemical Literature.—The Committee on Indexing Chemical Literature respectfully presents to the Chemical Section of the A. Ph. A. its Seventeenth Annual Report, covering the twelve months ending August, 1899.

WORKS PUBLISHED.

A Select Bibliography of Chemistry, 1492—1897. By Henry Carrington Bolton. First Supplement. Smithsonian Miscellaneous Collections 1170. City of Washington, 1899. pp. x, 489. 8vo.

This work includes titles omitted in the volume published in 1893, and brings the literature down to 1897, the plan and scope being the same. In collecting the 5554 titles the author had the cooperation of eminent men of science and letters in several parts of the world.

Index to the Literature of Thallium, 1861—1897. By Miss Martha Doan.

This is passing through the press and will probably be issued before this Report is presented to the Section. It will form one number of the Smithsonian Miscellaneous Collections.

WORKS IN PREPARATION AND REPORTS OF PROGRESS.

Index to the Literature of Zirconium. By A. L. Langmuir and Charles Baskerville.

The manuscript has been critically examined by each member of the Committee and unanimously recommended to the Smithsonian Institution for publication.

A Select Bibliography of Chemistry, 1492—1897. Second Supplement. By Henry Carrington Bolton.

The manuscript of this work, which embraces Chemical Dissertations only, has been completed and presented to the Smithsonian Institution.

A Bibliography of Malonic Acid and its Derivatives has been begun by Dr. Thomas Clarke, University of North Carolina.

A Third Supplement to the Select Bibliography of Chemistry has been commenced by Dr. H. Carrington Bolton.

"Science Abstracts." The Physical Society of London published in 1895—1897 three volumes of "Abstracts of Physical Papers from Foreign Sources," edited by Mr. J. Swinburn. Each volume has author and subject indexes. Since January, 1898, these abstracts appeared monthly in enlarged scope under the title: "Science Abstracts. Physical and Electrical Engineering." Issued under direction of the Institution of Electrical Engineering and the Physical Society of London. J. Swinburn, Editor. Monthly. Spon and Chamberlain, Agents, New York.

This important undertaking includes electrochemistry and chemical physics; the Editor is assisted in his work by W. R. Cooper and a corps of 52 abstractors.

H. Carrington Bolton, Chairman.

In Memoriam.

Mr. Robert Combs, who died April 11, at the age of twenty-seven years, was known to botanists through the publication of his collections in the vicinity of Cienfuegos, Cuba; and through his paper on the medical plants of Cuba published in this journal (see vol. 15, p. 87). He was assistant in botany in Iowa State College and in the Agricultural Experiment Station, and at the time of his death was one of the field agents of the Division of Agrostology, Department of Agriculture.

The venerable director of the Montpellier School of Pharmacy, M. Jean Jean, died shortly after his retirement. He was buried at Montpellier, where he spent his life, and where the bust of his uncle, the chemist Balard—the discoverer of bromine—may be seen in the school quadrangle. M. Marrol, Prof. of Physical Science at the School of Pharmacy, is spoken of as his probable successor.

Bibliography.

In the Johns Hopkins Hospital Bulletin, Vol. X., Nos. 101—102, Dr. Charles C. Bombaugh writes of Female Poisoners, Ancient and Modern. After commenting on the fact that "women appear to have been most addicted to criminal poisoning," the author gives a catalogue of the most noted women poisoners from the earliest times to the present. Coming to modern aspects of the matter, Dr. Bombaugh mentions some of the difficulties in the way of proving guilt by chemical evidence, especially "the concordant responsiveness of ptomaines, the alkaloids of putrefaction, to the general reagents for such alkaloids as morphine, strychnine, coniine, atropine, veratrine, etc." The perversion of expert testimony through the employment of experts by both sides, virtually as counsel, is discussed, and the author concludes: "The remedy lies in making the position a permanent one in the state, with judicial appointments from the ranks of demonstrated capability and scientific training."

Sanitary.

Flies as Bearers of Disease.*—In estimating the relative importance of flies and water supply in spreading disease, Dr. M. A. Veeder distinguishes between intestinal and malarial disorders. In the former the infection is a bacillus of some sort, the presence of which can be traced to contamination by excretions from a diseased bowel. In the latter the source of infection is peculiar to marshy or stagnant water, and independent of contamination from human sources. It is the author's belief that, with relatively unimportant exceptions, intestinal diseases are spread almost exclusively by flies and malarial diseases by water, and he supports it by citations from recent army experiences. Likewise, during the recent British campaign in Fashoda, which was most carefully planned and took place in a climate that is exceptionally dry and hygienic, there was no abatement of typhoid fever. In the case of an outbreak of malignant dysentery described by the author in a previous paper, taken at its height, not a new case occured after measures were adopted that made conveyance by flies impossible, although there had been fresh ones every day for some time previously. Another more recent "lively epidemic" of typhoid mentioned by the author was ended in a day by measures directed against conveyance by water. "When flies are responsible, there are little neighborhood epidemics, extending in short leaps from house to house, without reference to water supply or anything else in common. But when water is at fault the disease follows its use wherever it may go .... Epidemics spread by flies tend to follow the direction of prevailing warm winds, as though the fly, wandering outdoors after contact with the source of infection, had drifted with the wind, but nothing of the sort is perceptible in the case of water-borne disease."

* Pop. Sc. Monthly.

Pharmaceutical Review.

VOLUME 17. **NOVEMBER, 1899.** NUMBER 11.

Editorial.

On the third of last month, ex-Governor W. D. Hoard of Wisconsin, as President of the Farmers National Congress, addressed about 400 delegates at Faneuil hall, Boston. In the course of his address he said that "the principal drawback and hindrance to agricultural thought, profit and progress is a lack of union and sympathy between scientific theory and every-day practice on the farm." This lack of sympathy, no doubt, is partly due to the past and even present methods of teaching agriculture, or the entire absence of it; but it is also due to the fact that "the average farmer has too little sympathy for agricultural schools or for organized methods for a better agricultural education. This is seen in the fact that, as a class, he spends thousands of dollars to educate his children to be lawyers or doctors, where he spends one dollar to especially fit them to be intelligent farmers."

Substitute the word pharmaceutical for agricultural and you have the key to many of the troubles of the pharmacist the world over.

He then calls attention to the farmers who swarmed out of New England and New York into the old Northwest and who, knowing nothing about the rudiments of agricultural science, "sold fertility out of the soil by the bushel and by the ton" and thus ruined not only their farms, but entire communities. How many a druggist in his short-sighted haste to turn over as many dollars as possible has sold his professional status, and now finds not only himself but his confrères as well reduced to a state of petty commercialism that threatens to destroy the entire calling.

Concerning cooperation and the inevitable trust, Mr. Hoard remarks: "The vast extent to which the organization of trusts has attained means simply that the men who represent these varied interests have learned to cooperate for mutual benefit. Like every other

social power and privilege it can be carried to an extent where it amounts to a conspiracy against the general welfare. When that time comes, the people will cope with it successfully.

"But there is a hint in all this combining that is going on that the farmers should take to heart. Except in dairying and to a small extent in fruit-growing, this great lesson is utterly unheeded. Every creamery and cheese factory could easily be made the means of a larger and more beneficial use of cooperative economics."

In this respect also, the druggist seems to be in the same boat with the farmer. The druggist has railed against large capital and thorough qualification, both of which tend toward economic betterment. Concentration and specialization, the economic battle cry of the times, made no impression on him while fighting department stores and proprietors of patents along unconstitutional lines. "Cooperative economics" seems to be unknown to him. He has made attempts at cooperation, it is true, but at that kind of cooperation which does not tend to economics, but to higher prices. It is a pity that the so-called "patent medicine," this bane of professional pharmacy, seems to be the only thing so far that can rouse the average druggist from this lethargy. The woman clerk in the department store can about as well sell a bottle of a secret remedy as the pharmaceutical licentiate. Secret remedies are sold because they are advertised and no professional service is called for in handing them over the counter. The absurd belief in the 500 percent profit by the druggist will not leave the people as long as his attempts at cooperation are principally if not solely bent in screwing up prices, not for professional service but for the vending of articles about which he knows nothing.

Concerning the resolution adopted by the American Pharmaceutical Association at the Put-in-Bay meeting (see p. 434), viz. that graduation from a reputable college of pharmacy be made a prerequisite for the licentiate certificate, it has been said that the A. Ph. A. is not a representative body from the practitioner's point of view. It is not at all necessary to point out the fallacy of this contention to druggists who have attended the meetings of the A. Ph. A. As to the resolution, it may not be out of place to call attention to the fact that the Ohio Pharmaceutical Association first framed such a resolution. It is true that Ohio is studded with colleges and universities of all kinds, but we have not yet been informed that the

O. Ph. A. was made up principally of college professors. The Pennsylvania Association also preceded the A. Ph. A. in this respect, and New York to-day regrets that it did not succeed in passing a similar resolution. Indeed at the Cincinnati meeting of the N. A. R. D., which ought to be representative of the best elements of the American drug-trade if any association ever was, a representative of New York congratulated Ohio as being the first to advocate the diploma requirement for board examinations.

At its very first meeting, the N. A. R. D. passed the following resolution: "Resolved, That the delegates of this convention be urged to promote uniformity of standards among State Boards of Pharmacy, to the end that higher qualifications shall be required of those desiring to become registered as pharmacists." As a matter of fact, the druggists of this country can demand nothing better to improve their calling from a purely commercial point of view. The committe, appointed last year, reported at Cincinnati that "the cutting evil is not the only thing that has been instrumental in placing the drugtrade in its present unfortunate position and that the illiterate and irresponsible druggists have done their share in dragging the business down." According to the Era, this committee amplifies on last year's resolutions as follows:

"There should be but one standard in pharmacy and that the highest. And this can only be attained by stimulating higher education and the enactment of a uniform pharmacy law. The committee recommends that this association consider the feasibility of a uniform pharmacy law, believing that it is the source from which such a move should emanate. Cooperation with the American Pharmaceutical Association would be beneficial and desirable. Then there should be uniformity in education, and the committee believes this can be secured only through a systematic and thorough course of training in an institution devoted to such work. Such institutions should be required to maintain a uniform system of instruction, and to make their requirements for admission and graduation so stringent that thoroughly competent practitioners who have had both practical store experience and college training and whose character is beyond reproach shall constitute the pharmacists of the future. This will elevate pharmacy as a profession, place it in a higher social position and make its commercial interests more firm and beneficial. The report concludes:

"'The A. Ph. A. has taken very decided steps favoring this issue and we would recommend that this association approve its action and cooperate with it in this move for the advancement of pharmacy and improvement of the condition of the retail drug trade.'"

The committee to whom was referred the above report of the Committee on relations of state pharmaceutical education and laws to the drug trade, reported that the matter of pharmacy laws was of vital importance to the N. A. R. D., but that the section of the work relating to education should be left to the A. Ph. A. The adoption of this report speaks for itself as to the representativeness of the A. Ph. A. in the eyes of the N. A. R. D.

The programme of the Section Pharmacy and Pharmacognosy of the Verein Deutscher Naturforscher und Aerzte, which recently held its meeting at Munich, will be found on another page. Last month attention was called to the absence of scientific papers at the meeting of the German Apothecaries' Society. The programme referred to here shows where the scientific work of the German pharmaceutical investigators is presented. Many Americans will possibly be surprised that the programme is not more extensive. Attention should, however, be called to the fact that papers of pharmaceutical interest are read at other sections as well.

When the resolution was adopted by the A. Ph. A., that the meetings of this Association be so arranged, whenever possible, that the members of the A. Ph. A. can attend the meetings of the A. A. A. S. as well, the suggestion was made that the A. M. A. be substituted for the A.^{3}S. Now, no careful observer need be told that the papers read at the A. Ph. A. are of much greater interest to the general scientist than to the physician. Neither ought it to be necessary to point out that the pharmacist will find much more at the meetings of the A. A. A. S. than at those of the A. M. A.

There can be no doubt, on the other hand, that closer affiliation with the A. M. A. would prove of advantage. Why should not the A. M. A. as well as the A. Ph. A. come into closer touch with the general scientists of this country as represented by the A. A. A. S. and affiliated societies. Such an affiliation of the different elements we find not only in the Society of German Naturalists and Physicians, but in similar organizations of other European countries as well. To bring our three great national associations together would be a great thing indeed. *E. K.*

A Simple Alkalimetric Method of Estimation of Salt-forming Alkaloids Using Phenolphthalein as Indicator.*

By *H. M. Gordin* and *A. B. Prescott.*

From a theoretical point of view one of the best if not the best method of estimating alkaloids is undoubtedly the alkalimetric estimation of their basicity. The only drawback to this method has always been the fact that owing to this basicity being very weak, the acid combined with the alkaloid reacts with regard to most indicators and particularly phenolphthalein as if it were free. A large number of indicators have been proposed in order to make the end reaction sharp and definite; but any one who has had experience in the alkalimetric estimation of alkaloids knows well that in no case is the end reaction as sharp and decisive as it is, for example, in titrating sulphuric or hydrochloric acids with standard alkali. This indefiniteness of the end reaction makes a theoretically faultless method of very little practical value.

The following simple improvement makes it possible to estimate all saltforming alkaloids with as much sharpness as is obtained in inorganic alkalimetric analysis and admits of the use of phenolphthalein as indicator in all cases where carbonates etc. are absent. This improvement consists in precipitating the alkaloid after it has been taken up with an excess of standardized mineral acid, by a slight excess of some delicate reagent like Mayer's or Wagner's. Whatever the composition of the precipitate with regard to mercury or iodine will be, the alkaloid always falls out as a salt and therefore takes up an amount of acid which is equivalent to the combining weight of the base. Making up the mixture to a definite volume, shaking until the precipitate separates out, filtering off half, decolorizing with sodium thiosulphate in the case of Wagner's reagent, the excess of acid can be exactly determined by the aid of standard alkali and phenolphthalein as indicator. The alkaloid having been removed, the estimation can be carried out with the same sharpness as is obtained in ordinary inorganic alkalimetric analysis.

* A more detailed account will be found in vol. 2, p. 313, of the Pharmaceutical Archives.

This is the principle of the method. In order to obtain very good results, the acid and alkali should be standardized for each alkaloid by a weighed out sample of that alkaloid, and proceeding as above, otherwise the results will always be slightly too high. This is due to the fact that in the presence of organic matter some iodine of the potassium iodide of the reagents is set free and an equivalent amount of acid disappears. This can by proven by dissolving some alkaloid in acidulated water, adding a little potassium iodide and letting stand three or four hours. If the liquid be then tested with starch, the presence of free iodine can be easily shown.

Another advantage of this method is that by precipitating the alkaloid, a good deal of foreign matter, which generally accompanies alkaloids when these are obtained from extracts or tinctures, will also be thrown out, the excess of acid remaining in the filtrate.

We wish to draw the attention of chemists to this method and intend to give analytical data in the very near future.

Tincture of Strophanthus.

By *A. C. Loewe* and *Wilbur L. Scoville.*

Nearly four years ago it was noticed that when the percolate obtained in the process of making extract of nux vomica is thoroughly chilled for several hours, the fatty matter contained in it is separated in a solid condition and can be removed by filtration. The resulting extract is then lighter in color, and has less of a tendency to become lumpy than that made by the official process.

Since that time the separation of nux vomica fat by chilling in a mixture of ice and salt has been repeatedly tried, by successive classes, with uniform advantage. Numerous assays of the extracts made by this and by the official process, have shown that the chilling results in no appreciable loss of alkaloids, and that aside from the consideration of economy in ether, the improved appearance of the extract and the tincture prepared from it justifies the process. No attempt has been made, however, to ascertain whether the removal of the fat can be made complete by chilling alone, ether having been used subsequently in all experiments as a safeguard.

The marked advantages of the process have, however, suggested its extention to the preparations of other drugs.

Perhaps the most unsatisfactory preparation in this regard, now official, is the tincture of strophanthus. The Pharmacopœia of 1880 in making this, first treated the drug with ether to remove the fat, then percolated the dried residue with strong alcohol. This resulted in a presentable tincture, but the expense was objected to, and the last Pharmacopœia sought to meet the demand for greater economy by reducing the alcoholic strength of the menstruum, and insuring exhaustion of the drug with this menstruum by making digestion a preliminary to percolation. In spite, however, of the insolubility of fixed oils and fats in a reduced alcohol, a slow percolation of the seeds will result in a considerable portion of the fatty matter being washed through, giving a tincture which is first decidedly cloudy, then slowly deposits the fatty matter, leaving a liquid above which is neither decidedly cloudy nor bright.

The following experiments were, therefore, begun with a view to finding an economical method of producing a clear and bright tincture. Besides the simple chilling of the tincture, the principle frequently followed in analytical operations of combining the fat with a wax or hard fat before chilling was also tried.

1000 cc. of tincture of strophanthus were made according to the pharmacopœial formula, the drug being packed firmly and percolated very slowly. The tincture thus prepared was at first cloudy, and after standing a few days it deposited a very fine grayish sediment, but did not become clear. The tincture was divided into five equal portions, after shaking, of 200 cc. each.

A portion of 200 cc. was placed in a flask and the flask buried in a mixture of ice and salt. In a few minutes the temperature of the liquid had fallen to —14° C. and it was allowed to remain there for two hours. At the end of that time there was an abundance of a semi-flocculent grayish sediment floating in the liquid. The tincture was now filtered, maintaining the temperature at —14° as long as possible.

It filtered moderately fast and the filtrate was of a light brown color, bright and attractive, and absolutely clear.

After drying, the residue on the filter was found to be largely, but not wholly, soluble in ether. The clear liquid when applied liberally to tissue paper left no greasy stain on evaporation.

A second portion of 200 cc. was placed upon ice in an ice chest for 24 hours. At the end of that time it contained considerable of

a semi-flocculent precipitate, but not as much as in the first experiment. It was now filtered through a plain filter, in a cold room, the temperature of the latter being about 8° C. It filtered very slowly and did not yield a bright and clear filtrate. After warming to 12° C., the filtrate cleared and remained bright at temperatures above that, but it clouded decidedly when chilled. It left only a faint fatty stain when evaporated upon tissue paper.

A third portion of 200 cc. was heated to 50° C. It became darker in color, and after 15 minutes at this temperature it was clear. Two grams of spermaceti, previously melted, were now added, which restored the lighter color, but did not cloud it materially. It was then cooled slowly to 4° C. by means of an ice bath and held at this temperature for one hour, when it was filtered. It filtered slowly and the filtrate was cloudy. The entire fluid was again heated to 50° C., another two grams of spermaceti added and the liquid again cooled and placed in an ice bath for an hour. The filtrate was lighter in color and less cloudy than that just obtained, but was still unsatisfactory.

The entire liquid was heated the third time to 50° C. and two grams of spermaceti again added, then the liquid was cooled and chilled for an hour and a half. The fluid now had a considerable quantity of a light colored flocculent precipitate in it and filtered slowly.

The filtrate was cloudy, but became clear at 17° C. and remained clear at temperatures above that point. Only about two-thirds of the original tincture were obtained in the filtrate.

A fourth portion of tincture was heated to 50° C. and 1½ grams of stearic acid added. It dissolved quickly and produced a clear liquid which commenced to cloud at about 35° C. This was chilled one hour in an ice bath, when a dense yellowish-white mass settled out. The liquid filtered very rapidly and yielded a light, almost a straw-colored tincture which was clear at temperatures above 10° C.

Another portion of 50 cc. of the original tincture was treated in a similar manner with 0.250 gram of stearic acid. The resulting tincture was darker in color than the preceding and resembled those obtained in the first experiments more closely, but was not perfectly clear. Another trial, using 1 p. c. of stearic acid, resulted in a light brown fluid, which was clear above 12° C. and cloudy below that temperature. In all these experiments with stearic acid the chilled

mixture filtered rapidly and produced a tincture which was clear at ordinary temperatures, but which was lighter in color than the normal tincture.

Of all the clarified tinctures obtained, that produced by chilling with a mixture of ice and salt was the brightest and most attractive. A final experiment was, therefore, tried in which 100 cc. of tincture were chilled for one hour at a temperature of —14° C., then filtered. This, when filtered, was darker in color than the first and became very cloudy at 5° C. It was not as bright at normal temperatures as the first, though it showed no appreciable cloudiness.

A perfectly bright and attractive tincture is thus secured without the use of ether or other fat-solvent by simply chilling the percolate.

A twenty-four hours freezing in an ice bath produces a tincture as clear as the ordinary galenical preparation of the shops, and of a normal color. A more brilliant tincture is secured by chilling in a mixture of ice and salt. The percolate should be allowed to remain in this at a temperature of about —14° C. for at least two hours, and must be kept as near this temperature as possible during filtration.

In this connection we may be allowed to suggest that a cheap and convenient funnel-bath can be secured by cutting off the top of an ordinary gallon or two gallon tin can, such as oils and spirits are usually shipped in, at a suitable height. This is inverted, the funnel placed inside, the stem of the latter passing through the neck of the can, which is then made tight by means of a perforated cork fitting both the neck and the funnel stem. Since these can-tops usually have a greater angle of divergence than a funnel, the space between the funnel and the tin is easily packed with ice and salt, or filled with hot water for hot filtration.

Spermaceti did not yield satisfactory results and proved very wasteful. Stearic acid has the advantage of separating the fat in a condition which allows the liquid to filter rapidly, but it has a tendency to change the color of the tincture. One gram of stearic acid per 100 cc. produced a tincture of about the normal color which was in other regards quite satisfactory. It has, however, a slight odor of stearic acid and this would doubtless be the more pronounced, the less the chilling. All things considered, the two-hour chilling with ice and salt appears the most satisfactory of the processes tried, though it requires more care in filtering. By using a

funnel-bath, this is easily remedied, and the process then requires little time or attention.

Since these experiments, others have tried the chilling processes upon percolates obtained from stramonium seed and conium, with similar results. An extract of stramonium seed from which the fat has been removed by filtration, is much smoother than the official extract, and makes an ointment which remains homogenous for a longer time. Since a smaller yield of extract is thus obtained, which is therefore stronger in medicinal qualities, an extract so prepared cannot be used in the place of the official preparation except in proportionate amounts. Conium extract does not present so much of a difference in appearance, but the slight preference is in favor of the chilled percolate.

Pharmaceutical Laboratory,
Massachusetts College of Pharmacy.

Pharmacy in Russia.*

By *H. M. Gordin.*

The Russian pharmacist, like his American colleague, works much more and gets much less for his work than most other professional people of the community. The inability sufficiently to appreciate the value of the services which the pharmacist renders to society, seems to be common to all nations and in this respect the pharmacists of all countries are placed on the same footing. But an American drug clerk has that advantage over his Russian confrère, that it is always possible, if he only has the ability, to work himself up to a higher position in life and become the owner of a pharmacy. True, such a pharmacy will often be not much more than a small insect powder shop, but it is at any rate a beginning, and many a small beginning can be brought to a fine success by energy, skill and economy. Unfortunately there are no such chances for the Russian pharmacist. The Russian drug clerk that enters upon his toilsome career with empty pockets is doomed to remain clerking all his life long, as no amount of ability, perseverance and economy can enable him ever to

* Read before the students of the School of Pharmacy of the University of Michigan.

accumulate sufficient means to buy an established pharmacy. As to starting a new one, that is almost impossible. The reason for such a state of things is that pharmacy, like most other professional occupations in Russia, is under the strict regulation of the government. The number of pharmacies in the empire is limited by law. In the large cities there is allowed to be one pharmacy for every ten thousand inhabitants; in the rural districts there is not allowed to be more than one pharmacy for a certain number of square miles. Thus in St. Petersburg, with about a million inhabitants, there are less than a hundred drug stores, whereas in San Francisco for a population of less than three hundred thousand there are over two hundred drug stores. As to the country, an American traveller who is used to meet the sign of a drug store in every little village, where streets, avenues and even most of the buildings exist as yet only in the imagination of the real estate agent, would be surprised to pass dozens of Russian villages never missing the sign of a saloon, but hardly ever noticing that of a drug store. For this reason those that happen to own a pharmacy in Russia know very well that they have a gold mine in possession and are very seldom willing to sell out. If once in a while a druggist, *après fortune faite*, desires to retire, his business commands such a high price in the market that a poor drug clerk would have to work as long as Methusalem lived and spend as little as a Chinaman in order to save up half of it. Of course, there is plenty of room for new drug stores in the peasant districts of the vast Russian empire; but if country life is pretty dull in all countries, life among Russian peasants with their poverty and dense ignorance offers little attraction indeed for an educated pharmacist.

Another entirely un-American characteristic of Russian pharmacy is the fact that the prices of prescriptions are not left to be regulated by competition, but are strictly fixed by the government. Every pharmacist conducting a drug store is obliged to provide himself with an official schedule, in which the prices of all pharmacopœial drugs and a great many other things that are used in putting up prescriptions are laid down once for all. This official schedule consists of two parts: one is called *Taxa medicamentorum* and contains the prices of crude drugs and galenical preparations in quantities from one grain to a pound; the other is called *Taxa laborum* and contains additional charges for bottles, boxes, labels, sealing wax, strings, wrapping paper, etc., besides special charges for the various

degrees of professional skill required for different prescriptions. Thus there is so much for making pills, so much for making an infusion or a decoction, a plaster, or a suppository and so on. Upon receiving a prescription, the druggist is obliged to write down upon the original the price of every ingredient that goes into it and then add the additional charges taken from the *Taxa laborum*. Not only has a druggist no right to charge for a prescription more than the schedule allows him to, he even cannot charge less for it, unless he puts down on the prescription *p. p.*, which means *pro paupero*. Under such particular care of a paternal government the owner of a Russian pharmacy can make much more than a good living by sticking to his professional calling without having to resort to side issues like cigars, toilet articles, etc. A Russian pharmacist would be really amazed if he knew that his brethren on this side of the ocean have to handle things that have not the remotest connection with pharmacy. It is needless to say that cutting of prices, that deplorable result of a competition *à outrance*, is entirely unknown in Russian pharmacy, as prescriptions must be sold at the same price from Kamtchaka to the Baltic sea, and as to articles which are sold over the counter, cheapness would be the worst recommendation for a drug store, unless it be combined with a very high reputation for the honesty of its owner. If one drug store does a larger business than another, it is either because it is much better located or because its manager has acquired a name in the community for particular skill and learning. Patent medicines, cure-all nostrums and other secret and mostly worthless remedies, for which the "shrewd" Americans are made to pay enormous sums annually upon false pretense, do not and could not exist in Russia, where secret things in general are not looked upon favorably by the government, and where a government official is allowed and even enjoined to poke his nose everywhere and into everything. Besides, newspaper reading being much less developed in the mass of people than in this country, all the smooth talk and the wonderful stories of the wonderful cures of the American patent medicine man would be in Russia like a voice in the wilderness. Except a few French and English preparations like *Vin de Chapoteaut*, *Tamar Indien*, etc., which are prescribed sometimes by physicians, no stock of safe or unsafe cures, golden or other discoveries, red or otherwise colored pills is known to the Russian pharmaceutical profession. For ordinary ailments, where the aid of a physician is not

considered imperative, the public use simple remedies like black draught, volatile ointment, etc. A few other remedies are put up by every druggist, like corn salve, diarrhœa drops, and so on.

A very important feature of Russian pharmacy is the occasional inspection of drug stores by a commission appointed by the medical department. This commission generally consists of the director of the medical department, a chemist, also an official of this department, and some prominent druggist of the city. The commission often swoops down quite unexpectedly and with unnecessary bluntness, particularly if the proprietor is not a Russian, scrutinizes the purity of the chemicals, the cleanliness with which they are kept, and often even quizzes the junior clerks upon pharmaceutical matters. The chemist accompanying the commission carries with him a small outfit of reagents and utensils and also makes use of these reagents, of which indeed every drug store is obliged to keep on hand a full list. The chemist takes the specific gravity of the more important tinctures, tests quinine and morphine salts for adulterants, estimates the strength of tincture of iodine, examines crude drugs for foreign substances, and drawers, bottles and other containers for general care and cleanliness with which things are kept. Of drugs that cannot be assayed quickly he takes along small quantities for subsequent examination. The proprietors of pharmacies generally try to keep on good terms with the lower officials of the medical department, who for the sake of a small present often inform the druggist beforehand of an intended inspection of his shop and so give him a chance to give his store a thorough scrubbing before the appearance of the inspectors. This institution of official inspection is certainly an excellent one for the community and is worthy of introduction into this country where it would do more good than in Russia, where, owing to the lack of integrity among officials, the commission often spend their time with the proprietor at a game of whist and tasting his champagne instead of testing his drugs.

The appearance of a pharmacy in Russia differs considerably from that of an American drug store. The Russian pharmacy is often situated not on the ground floor, but in the second story and looks more like a physician's office connected with a pharmaceutical laboratory than a retail business shop. The windows are used for the simple purpose of admitting light, not for displaying gold fish, flower seeds, pictures of foolish, bald-headed men who could never be per-

suaded to try X's Hair tonic and other pictures of very sensible people with forests of hair on their heads as a reward for having tried the same Hair tonic. The pharmacy usually consists of several rooms. In the first room, which often resembles a physician's waiting room, the prescriptions are received and priced by the so-called "receptuarius" and then carried to the next room containing a row of small tables or a long counter with several assistants ready to compound them. The assistant, after filling the prescription, delivers it to the receptuarius without tying and sealing it. The receptuarius then subjects the medicine to as much scrutiny as possible before tying, sealing and delivering it to the customer. In some stores there is a special taster or smeller whose not very enviable duty it is to taste, smell and otherwise examine every prescription before it leaves the pharmacy. The pleasure of tasting a couple dozen castorial emulsions every day must not be very great indeed. Prescriptions containing substances easily affected by light are always put up in amber colored bottles, and odoriferous or hygroscopic powders in wax paper. Remedies for external use have yellow labels, those for internal use white ones. If a physician wants his prescription to be put up quickly, he generally writes upon it the words: "*cito*, *citissim* or *statim*," and the assistant upon noticing these words on a prescription will drop everything else and attack this one. The original prescription is never returned to the customer, but he is always given a copy of it written on a long slip of paper called "signature" and containing also the name of the patient, the date and directions for use. A prescription is generally repeated provided it contains no powerful or narcotic ingredients, in which case it cannot be repeated without the signature of the physician.

Next to the prescription room there is usually the so-called material room (*Materialzimmer*), where the stock and larger containers are kept. Behind the material room there is the laboratory, which is fitted out with a boiler having several compartments for infusion vessels and a still for distilled and aromatic waters and is connected with a drying chamber; an oil press, a tincture press and a lot of other apparatus. All galenicals and pharmaceuticals that can be made on an ordinary scale, like solid and powdered extracts, salves, aromatic waters, etc., are manufactured in the drug store. The laboratory is under the care of a special pharmacist called "laborant," who has under his direction one or two common laborers

(mujik) to do the hard work, like powdering drugs, working the press, etc. The laboratory is generally connected with a cellar for salves, syrups, etc., and an attic for drying fresh roots and herbs. The drug store is in most cases connected with a dining room and several sleeping appartments, as the clerks are generally boarded and lodged by the proprietor. The store is opened at about 8:30 A. M. and closed at 10 P. M., but there is always an assistant sleeping in the store to answer night calls. When the night bell rings, one of the common laborers mentioned above, with whose sleeping place the bell is connected, goes down and lets in the customer and then wakes up the assistant.

In order to enter the pharmaceutical profession as apprentice, the young aspirant must present a certificate of having satisfactorily passed an examination of the first four classes of the "classical gymnasium." The subjects of examination are: History, Geography, Russian language, French or German, Plane Geometry, Algebra up to quadratic equations, and considerable Latin, but no Greek. The first year of apprenticeship the would-be pharmacist is pretty much knocked about, as he has to cut and paste labels, fill bottles and drawers and help everybody else in the store without having any well defined sphere of occupation. He generally gets board and lodging and only a few "roubles" for pocket money. The second year his pay is increased and he is allowed to put up prescriptions under the strict supervision of an assistant. The third year the apprentice divides his time between work in the laboratory and putting up prescriptions. During the three years of apprenticeship the young man is supposed to manage to find leisure for studying the pharmacopœia and its commentaries, botany and other sciences allied to pharmacy. Some really manage to do so, but the majority prefer to utilize the three years for learning only the practical part of putting up prescriptions and making pharmaceutical preparations and to sit down after the years of apprenticeship for a couple of months to hard cramming and fill themselves with pharmaceutical book wisdom. So filled, the aspirant for an assistant's diploma presents himself to the examination at the medical department of some university. The examination consists in the recognition of drugs, a knowledge of incompatibilities, posology, botany, a little chemistry and the art and science of putting up all kinds of prescriptions. Having obtained the assistant's diploma, the young man usually returns to the drug store

for 2 or 3 years, after which he enters the university for a two years' course in pharmaceutical sciences, and then after passing an examination obtains his final diploma as "Provisor." Though there is a higher pharmaceutical degree of "Magister Pharmaciæ," nobody strives to attain it, except those who intend to devote themselves to a purely scientific career. On the other hand, as a good experienced assistant is often able to command as much salary as a provisor and even has a right to manage a drug store in certain parts of the empire, a good many pharmacists stop their pharmaceutical education with the obtaining of the assistant's diploma. Owing to the difficulty of establishing oneself independently in a large city and to the natural disinclination to remain clerking to the end of their days, a considerable number of Russian pharmacists establish themselves in some God-forsaken corner of the immense empire, others seek salvation in rich marriages and again others try to find refuge in foreign countries where there is more freedom to individual initiative. Most of those that come to this country, after having overcome the natural aversion for the unprofessional ways of American pharmacies, turn out very successful men; others who are not able to imbibe the spirit of the land give up the arena of a free fight for all and return to the domain of the Czar, completely disappointed.

Some Coniferous Volatile Oils.

By *Edward Kremers.*

On another page will be found a review from the pen of Dr. F. B. Power of the most excellent monograph "Die aetherischen Oele" by Dr. E. Gildemeister, member of the chemical staff of the firm of Schimmel & Co., and Dr. Fr. Hoffmann, the founder of this journal, whose versatility in matters pertaining to the history of pharmaceutical subjects is well known to the readers of the Review. The literary product of two such men, when supported by all the means at the command of the above mentioned world famed firm, and the recources of German university libraries, is of necessity one that commands universal admiration. The work is not only a classic in its line but will, no doubt, become the model for like treatises. By the intimate blending of history with natural science, the latter becomes popularized in the best sense of the term.

It is not the intention of the writer, however, here to present another review of the work referred to. Dr. Power has done that in his usual admirable manner, and the readers are referred to it (see p. 532). The writer, however, desired to make the above introductory remarks in order that he may not be misunderstood in presenting the following notes. No matter how excellent a treatise may be, no one will expect it to be perfect. Further, no one can be more desirous to have imperfections remedied than the authors of a treatise that is bound to be the universal standard. Keenly interested as the writer is in the subject, it is in this spirit that he offers the notes which may from time to time be followed by others.

I. Oil of White Pine.

Among the oils that have at least been partly examined, but are not enumerated in "Die aetherischen Oele," is that of *Pinus strobus* L. An abstract from a thesis on this subject was published by W. A. Trayser in the Proceedings of the Wisconsin Pharmaceutical Association for 1891, p. 41. Inasmuch as these Proceedings do not enjoy a wide distribution in the scientific world, it is but natural that this note should have been overlooked.

The white pine, *Pinus strobus* L. (*P. s. alba* Loud., *P. s. brevifolia* Loud., *P. s. compressa* Loud., *P. s. nivea* Hort., *P. nivea* Booth, *P. tabulæformis* Hort. [ex C. Koch], *P. tenuifolia* Salisb., *P. umbraculifera* Hort. [ex Koch]), is also known locally by the following common names: Weymouth pine, the *Weymouth Kiefer* of the Germans (Mass. & S. C.), northern pine (S. C.), and spruce pine (Tenn.). The term white pine, as used by lumber men, is not restricted to *P. strobus*. White pine is largely cultivated and the following varieties are distinguished in cultivation: *Pinus strobus brevifolia* Loud., *P. s. umbraculifera* Knight, *P. s. minima* Beissn., *P. s. fastigiata* (Koch) Beissn., *P. s. viridis* Carr, *P. s. gracilifolia* Sudw., *P. s. nivea* (Knight) Carr, *P. s. aurea* Carr, *P. s. variegata* Carr, *P. s. sebrina* Beissn., *P. s. prostrata* Hort. Kew., *P. s. unifolia*, Nov. (Sudw.).

White pine occurs from Newfoundland and the northern shore of the Gulf of St. Lawrence to the northern shore of Lake St. John and the head waters of Moose river, and westward to Lake Michigan and the valley of the Winnipeg river, ranging southward to southern Penn., the south shore of Lake Michigan, banks of the Illinois river as far south as La Salle Co., Ill., and the valley of the Iowa river in central

Iowa; also extending along the Alleghany mountains through eastern Kentucky, and from western Virginia, N. C., So. C. south into Ga.*

The leaves of the white pine were collected in January near New London, Wis., from young trees ⅔ to 1 meter high, which were identified by Dr. Barnes, then Professor of Botany at the University. Shortly after collection the leaves were subjected to steam distillation in this laboratory. The yield was very small, only 10 grams of oil, or 0.09 p. c., being obtained. The aqueous distillate had at first a decided herbaceous odor which, however, was lost upon standing, a characteristic terebinthinate odor remaining. No doubt, the time of collection may be in part responsible for the small yield. A botanical explanation, however, is readily found by making a cross section of the leaf. Whereas the leaf of *Pinus sylvestris* L., which yields the "Kiefernnadelöl" of commerce, has seven resin-, or more correctly oleoresinducts, the leaf of *P. strobus* has but two.

Upon distillation the following fractions were obtained:

Fraction	I.	155—170°	ab't 30 p. c.
"	II.	170—190°	" 15 "
"	III.	190—265°	" 8 "
"	IV.	265—285°	" 42 "
Residue		285° +	

Fraction I. was a colorless liquid of terebinthinate odor, and was optically inactive. Dissolved in three times its volume of glacial acetic acid and two volumes of ethyl nitrite, a small portion kept cold in a freezing mixture immediately gave a precipitate upon the addition of hydrochloric acid. The white crystals which when washed and dried melted at 105—106°, were evidently pinene nitrosochloride.

Fraction IV. was slightly yellow and viscid and, when subjected to the temperature of a freezing mixture, remained liquid. It is possibly a sesquiterpene, but the amount was too small to attempt identification.

Besides the mere trace of oil, the leaves were found to contain about 2 p. c. of resin.

Incidentally it may be of sufficient interest to mention that the cambial juice of this tree, like that of a number of other conifers, contains the glucoside coniferin which upon hydrolysis yields vanillin.†

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* For the above botanical information, the writer is indebted to his colleague, Professor L. S. Cheney.

† Tiemann & Haarmann: Berichte, 7. p. 608.

Arrangement (and Fitting) of Drug Stores.

Some months ago an illustrated brochure on "Apotheken-Einrichtungen der Vergangenheit und Gegenwart" was published by the furniture factory of Franz Schneider in Leipzig. The text was written by Dr. Hermann Peters, the well-known apothecary of Nürnberg, the author of "Aus pharmaceutischer Vorzeit in Bild und Wort". The excellent historical work of Dr. Peters and his close connection with the pharmaceutical collections of the National Museum at Nürnberg, have preeminently fitted him to write a popular essay—for such the above monograph is—on this subject.

As may be expected, the plans and illustrations are such that but few if any American pharmacists would want to reproduce them. The American drug-store is so different from the German type that plans which are designed for the latter cannot readily be adapted to the former. Nevertheless the matter is of sufficient practical importance to warrant our calling attention to the subject of the artistic arrangement of drug store furniture by reproducing the six models presented in the above mentioned brochure.

The first device shows the inner arrangement and equipment of a pharmacy designed in the Gothic style, the second in that of the renaissance, the third in the baroque, the fourth in the rococo, the fifth in the empire, and the sixth in what is called the English style.

This, the first instalment, contains an abbreviated historical introduction and the cut showing the ground-plan and arrangement of a pharmacy designed in what is known as the late Gothic style. This, as well as the illustrations that are to follow, are to be taken as types rather than as specific plans and designs. To every wide awake pharmacist they ought to be full of suggestions. We also hope to present to our readers plans and photographic representations of typical American drug stores, also more particularly of the modifications the American type has undergone here and there and which are not generally known. The writer would be pleased indeed if the readers of this journal, who take an interest in the subject herewith introduced, would sent to the editor plans and photographs of stores that may be of interest in connection with the study of this subject.

During antiquity, the prescribing of medicaments and their dispensing was not practiced by two distinct professions. The phy-

sicians of this period were in the habit of preparing their own medicaments. Among the Greeks and Romans we, therefore, do not find apothecary shops in the modern sence of the word. However, the *pharmacopolæ sellularii* and *seplasiarii* may be regarded as the forerunners of the modern apothecary.* These ancient venders of medicaments sold in their shops the crude drugs used in medicinal mixtures, also some preparations used in cosmetics and popular medication. They also sold poisons, not only for legitimate, but for criminal purposes as well and, therefore, did not rank high socially.

Concerning the equipment, interior as well as exterior, of the old Roman drug-shops we know but little. However, upon examination of "Was in der Zeiten Bildersaal jemals ist trefflich gewesen" we find that pictorial representations of the drug shops of classical antiquity are not altogether wanting. On the wall of one of the houses of Pompeii are to be found the colored reproductions of huge snakes.

With the Greeks and Romans the snake was not the symbol of fiendish trickery and deceit but the symbol of knowledge and wisdom, especially of medical knowledge. For what reason the snake was assigned, such a position the writers of antiquity do not report. In all probability the ancients marveled at the fact that the snakes were not themselves destroyed by the powerful poison within them. It was the opinion of antiquity that the snakes unquestionally contained the requisite antidote in their own bodies. Based on this supposition the non-poisonous parts of the snake were considered as the most powerful remedy. For this reason Aesclepius, the god of medicine, was provided as an attribute of his calling, with a staff around which a snake wound itself.

In the Pompeiian house decorated with snakes a number of glass containers were found under the volcanic ash. These are now preserved in the Museum at Naples. It is probable, therefore, that a *pharmacopola* had his shop in this house. Unfortunately nothing else of a pharmaceutical character has been found.

A handsome representation of pharmaceutical import can be found in the Casa dei Vetti recently excavated in Pompeii. In one of the rooms of this well preserved house there can be seen colored wall-paintings on a black background, showing cupids who are engaged in the practice of the various professions.

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* Berendes considers the rhizotomists as the true predecessors of the apothecaries. See p. 204. *Ed.*

One of the paintings represents pharmacy. It shows a medicine chest with a number of containers of different forms, also a statuette. Whether the latter is to represent the god of medicine or Hygeia is not evident. In front of the medicine chest is to be seen a cupid with a container and a pair of scales. To the left a cupid seems to be engaged in the preparation and sale of cosmetics, to the extreme right two other cupids are engaged in the expression of liquids, the press being operated not by screws but with mallets. Others are engaged in stirring substances in a large crucible and in an evaporating dish.

Of the arrangement and interior equipment of the first apothecary shops of the middle ages but little is known. In Germany the first apothecary shops were established at the beginning of the 13th century.

Fig. 1. Apothecary shop according to wood-cut of 1536.
From Peter's "Aus pharmazeutischer Vorzeit," 1891, p. 42.

The oldest pictorial representations of apothecary shops from which we can derive anything more than mere suggestions belong to the late Gothic period such as prevailed toward the end of the 15th century. One of the finest representations of an apothecary shop of this period is a fresco dating about 1490 which is to be found in the Castello d' Issogne in the county of Aosta of the Italian province Turin. Only a few years ago the art treasures of this Savoy Castle were made accessible to wider circles by an illustrated work by R. Forrer, "Spät-gothische Wohnräume und Wandmalereien aus Schloss Issogne".*

A considerable number of cuts of apothecary shops belonging to

* Verlag von Fritz Schlesier, Strassburg i. E., 1896.

the Gothic period are found in some of the earliest medical incunabula some of which have been reproduced in Peters, Aus pharmaceutischer Vorzeit.*

In these, like in the Italian illustratrion, the wooden furniture is mostly plain in style.

Fig. I. is taken from the "Reformation der Apotheken" by Otto Brunfels, who is best known through his "Kräuterbuch." The book was published in Bern, where Brunfels was city-physician, and was written for the benefit of the city-government as a guide for the improvement of the practice of pharmacy. Two years after his death, however, it was published in Strassburg with the above cut on the title page. In comparing this cut with others of the middle ages, it will be observed that the coats-of-arms which are commonly found on the containers of that period are replaced by simple labels similar to those in use to-day.

Fig. II. shows the arrangement and equipment of a drug store conceived in the style of the late Gothic period. The wood best adapted to the solid, noble, yet austere forms of the Gothic style is natural oak. To the lower right hand will be found the ground plan of the store in the ratio of 1:100. On either side of the entrance is a window facing the street. On one side of the store a door opens into the "Material-kammer" the supply or storage room and thence into the laboratory. On the opposite side another door opens into the library or office and thence into the living-rooms. Opposite the entrance is a long counter, joined at either end by short counters at right angles. These are terminated by two prescription counters near the windows. The illustration shows only the left and rear walls of the store. The details of the counter with the artistic show case in the centre and the double bench in front of the latter, of the prescription tables, of the shelving and ceiling become apparent from the accompanying cut. The containers are not the usual cylindrical style so common in this century but majolica† of various shape which impart an exceedingly rich appearance to the store but which to Americans will seem more ornamental than useful.

Several Italian apothecary shops, notably the one in Bologna, opposite the Plazza Galvani are supplied with such majolica con-

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* Verlag von Julius Springer, Berlin, 1891, pp. 11—37.

† Glazed, Italian faience of the 15th and 16th centuries. Now all glazed and painted earthenware.

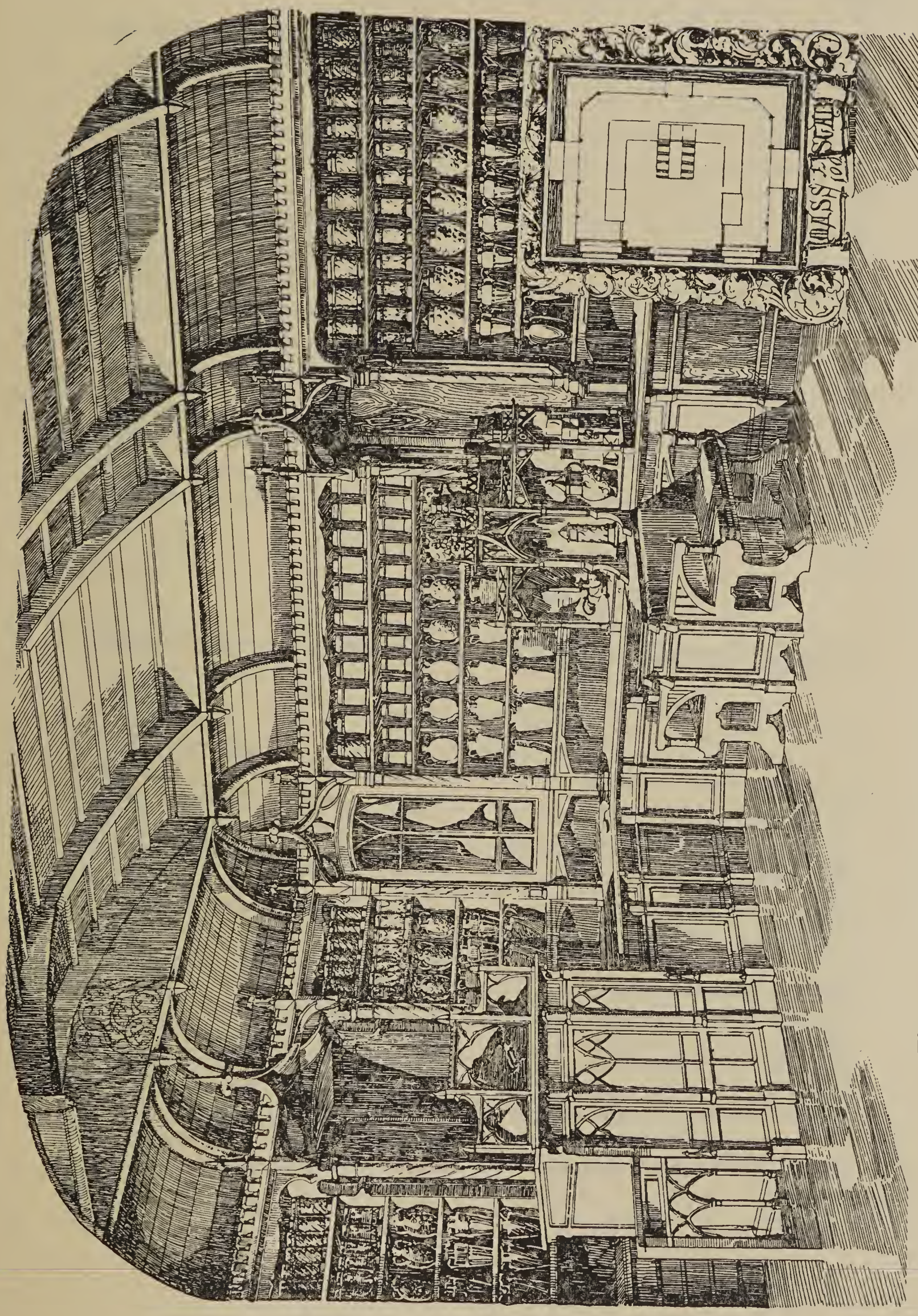

Fig. 2. Equipment of a pharmacy in accordance with the Gothic style.
Designed by the "Hof-Moebelfabrik" of Franz Schneider in Leipzig.

tainers. They are rather large and painted blue, quite picturesque and contrast favorably with the sober white porcelain jars of to-day. A large collection of such majolica containers will be found in the pharmaceutical collection in the National Museum at Nürnberg. Beautiful specimens are also in the private collection of the apothecary Reber at Geneva. In as much, however, as the glazing is apt to crack they cannot be considered very desireable because even fresh ointments will rapidly acquire a rancid odor. Neither are as many ointment jars necessary to-day as in former periods. In a waiting-room of an ideal pharmacy where the object of the shelf-containers serve the purpose of decoration rather than practical utility and where the compounding is performed in a separate room, such shelf-ware may serve an excellent purpose.

In accordance with the custym of the Gothic period, the floor should prerferably be made of tiles. Stained windows will also assist materially in creating something of a mediaeval atmosphere and thus lend a peculiar charm to the entire equipment.

Popular German Names of Domestic Drugs and Medicines.*

By *Fr. Hoffmann.*

Gichtwurzel—*Rad. bryoniae.*
Gilbwurzel—*Rad. curcumae.*
Ginster, Ginstkraut } *Herb. genistae.*
Glander—*Fruct. coriandri.*
Glanse—*Herb. genistae.*
Glapp—*Rad. jalapae.*
Glaskraut—*Herb. parietariae.*
Glaspech—*Resina pini.*
Glassalbe—*Ungt. simplex.*
Glatschen—*Flor. rhoeados.*
Glaubersalz—*Natr. sulfric.*
Gliederbalsam—*Mixt. oleos. bals.*
Gliederbalsamtropfen, Gliedergeist — *Spir. angelic. comp.*
Gliederkräuter—*Spir. aromaticae.*
Glieder-öl—*Ol. coctum viride, Ol. Tereb.* oder *Ol. Terebinth. et Ol. hyoscyami* aa.
Gliedergrindsalbe, weisse — *Ungt. hydrarg. alb.*
Gliederreissendes Pulver — *Pulv. liquir. comp.*
Gliederrecköl, Gliedersplitteröl } *Ol. hyoscyami.*
Gliedersalbe — *Ungt. rorismar. comp.*
Gliederspiritus—*Spir. angelic. comp., Linim. saponis.*
Gliedkraut—*Herb. sideritidis.*
Glitschpulver—*Talc. venet. pulv.*
Glitzenstein—*Zinz. sulfuric.*
Glockenwurzel—*Rad. helenii.*

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* Continued from p. 460.

Glöckner's Pflaster — *Empl. fuscum*
Glore—*Terpenthin.* [*camph.*
Glückwurzel—*Rad. victor. long.*
Gnadenkraut—*Herb. gratiolae.*
Gnatzsalbe—*Ungt. contra scabiem.*
Gochheil—*Herb. pruncllae.*
Göttlicher Balsam—*Mixt. oleoso balsam.* auch *Tinct. benzoes comp.*
Göttlicher Stein—*Zincum sulfur.*
Goldadertinktur—*Elix. ad long. vitam.*
Goldaderwurzel—*Rad. zedoariae.*
Goldbalsam—*Spir. lavand. comp.*
Goldblumen—*Flor. calendulae.*
Goldglatte—*Lithargyrum.*
Goldhaar — *Herb. polytrichi comm.* (*Herb. Adianti*).
Goldpflaster—*Empl. fuscum.*
Goldruthe—*Herb. solidag. virgaureae.*
Goldschwefel—*Stibium sulfurat. aurant.*
Goldtinktur, Goldtropfen } *Spir. aeth. ferrat., Tinct. aromatica.*
Goldwurzel — *Rad. asphodeli* (*Rad. curcumae*).
Goldwurzelpulver — *Rad. tormentill.*
Goldwurzelsalbe—*Ungt. flavum.* [*pulv.*
" in Stangen—*Empl. oxycroc.*
Gollaun—*Alumen crudum.*
Gottesgnadenkraut—*Herb. gratiolae.*
Gottesgnadpflaster — (*Empl. melil-*
Gottesheil—*Herb. prunellae.* [*oti.*)
Gottvergessenthee — *Herb. marrubii, Herb. trifol. fibrin.*
Goulard's Salbe, Goulard'sche Brandsalbe } *Ungt. plumbi.*
Goulard's Wasser—*Aq. Goulardi* (*Aq.*
Grätenstein—*Cetaceum.* [*plumbica.*)
Granatblumen—*Flor. granati.*
Granatwurzelrinde—*Cort. rad. gran-*
Grasspiritus—*Spir. angel. comp.* [*ati.*
Graswurzel—*Rhiz. graminis.*
" rothe—*Rhiz. caricis.*
Grauer Dunst—*Tutia praep.*
Graue Pomade, Graue Salbe } *Ungt. hydrarg. cin. dilut.*
Graues Pulver—*Pulv. jalapae.*
Grenadiertropfen—*Tinct. chinioidini.*
Grensing—*Herb. millefolii.*
Grete, feine, Griechischer Heusamen } *Sem. foeni graeci.*
Griesasche—*Kali carb. dep.*
Griesgrau—*Ungt. lapidis calaminaris.*
Griespulver — *Pulv. carminat., Pulv. lap. cancror.*
Grindkraut—*Herb. scabiosae.*
Grindsalbe—*Ungt. contra scab. gris., Ungt. pediculor.*, auch *Ungt. zinci.*
Grindwurzel—*Rad. imperatorii., Rad. Helenii., Rad. pyrethri.*
Gröhn=Grün.
Gröschelthee—*Herb. bursae past.*
Grottenpulver—*Pulv. rad. enulac.*
Grüne Butter—*Ungt. majorani.*
" Nerven Salbe—*Ungt. rorismar. comp.*
" Pappel Salbe—*Ungt. populi.*
Grüne Salbe—*Ungt. populi.*
Grüne Seife—*Sapo kalinus, Sapo viridis.*
Grüner Abzug—*Ungt. populi.* [*idis.*
Grüner Vitriol—*Ferr. sulfuric.*
Grünes Brustpulver — *Pulv. liquir. comp.*
Grünes Wachs—*Cerat. aeruginis.*
Grünkrautwurzel—*Rad. bistortae.*
Grünpulver—*Pulv. liquir. comp.*
Grünsingkraut—*Herb. millefolii.*
Grünspan—*Aerugo.*
" krystall.—*Cupr. acet. cryst.*
Grünspanliniment—*Oxymel aeruginis*
Grünspansalbe — *Cerat.* oder *Ungt. aerugin.*
Grundheilkraut—*Herb. veronicae.*
Grundwurzel—*Rumex crispus.*
Gulaschwasser — *Aqua plumb. Goulardi.*
Güldener Balsam—*Tinct. lignorum.*
Güldenwiederton—*Herb. adianti aurei.*
Gummipflaster—*Empl. plumbi comp.*
Gummipulver—*Gummi arab. pulv.*
Gundelkraut, Gundelrebe, Gundermann } *Glechoma hederacea.*
Gundermannbutter—*Ungt. populi.*
Gundling—*Herba. serpylli.*
Gundrum—*Herba hederac.*
Gurgelsalz — *Alum. pulv. kali chlor.* (!)

Gurkendill—*Fruct. ancthi.*
Gurkenwurzel—*Rad. caricis.*
Gurkemeh, Gurkenmehl, Gurkumei } *Rad. curcumae*
Guter Heinrich—*Herb. chenopodii.*
Gutheil—*Herb. brunellae.*
Haarfett—*Pomade.*
Haarstrangwurzel — *Rad. peucedani, Rad. mei.*
Haarwürzeln—*Scm. cynosbati.*
Haberkähm—*Sem. cumini.*
Habichtskraut—*Herb. hederae.*
Hack und Mack—*Tacamahaca.*
Hackelbraut—*Herb. pulsatillae.*
Hädernesselgamander—*Herb. hederae terr.*
Hämorrhoidalpulver — *Pulv. liquir. comp.*
Hämorrhoidalsalbe—*Ungt. gallarum.*
Hämorrhoidalthee—*Spec. laxantes.*
Hämorrhoidaltinktur—*Elix. ad long. vit.*
Haferkrautblumen—*Flor. rhoeados.*
Haferkümmel—*Fruct. cumini.*
Hagenbuttensalbe—*Ungt. flavum.*
Hagebutte, Hahnebutten, Hahnehödchen } *Fruct. cynosbati.*
Hahnenöl—*Ol. hyperici.*
Haller's Sauer, Hallisch Sauer } *Mixt. sulf. acid.*
Halstropfen—*Tinct. pimpinellae.*
Hamburger Essenz—*Elix. proprietat.*
" Lebensol—*Mixt. oleos. bals.*
" Pflaster—*Empl. fuscum.*
Hambutten—*Fruct. cynosbati.*
Hammeltalg—*Sebum ovillum.*
Handtellersalbe—*Ungt. hydrarg. alb.*
Hahnebutten—*Fruct. cynosbati.*
Hanfsamen—*Fruct. cannabis.*
Hanfkraut—*Cannabis sativa.*
Hans frag nicht danach, Hans komm her, Hans nichts nütz, Hans thu mir nichts, Hans, was gehts Dich an, Hans, was willst Du } *Ungt. contra scabiem gris.*
Harburger Lebensöl—*Mixt. oleos. bals.*
Harlemer Balsam, " Oel } *Ol. terebinth. sulf.*
Harmeln—*Flor. chamomill. vulg.*
Harnkraut—*Herb. linariae, Herb. lycopodii, Fol. uvae ursi.*
Harnkrautwurzel—*Rad. caricis., Rad. ononidis.*
Hartbruchpflaster—*Empl. oxycroc.*
Harthagel—*Herb. abrotani.*
Harthechel—*Rad. ononidis.*
Hartpech—*Pix navalis.*
Hartpflaster—*Empl. oxycroc.*
Hartspankraut—*Herb. chenopod.*
Hartspansalbe—*Unyt. populeum, Ungt. rorismar. comp.*
Hartspanntropfen—*Tinct. aromatica, Tinct. chin. comp.*
Hartseinöl—*Ol. succini.*
Harz, Burgundisches—*Resina pini.*
Harzgespann—*Herb. cardiacae., Herb. balloti.*
Harzhorn—*Liq. ammon. caust.*
Harzöl—*Ol. terebinth.*
Harzpflaster—*Empl. resinosum, (Cerat. resin. pini).*
Harzsalbe—*Ungt. basilicum.*
Haselwurz—*Rad. asari.*
Hasenblüthen—*Flor. spartii scoparii.*
Hasenfett — *Adeps leporis (Adeps suillus).*
Hasenklee—*Herb. acetosellae, Herb. trifol. arv.*
Hasenöhrle—*Flor. gnaphalii.*
Hasenpappel—*Herb. malvae.*
Hasensprung — *Bolet. cervin.*, auch *Conchae praep.*
Hauhechel—*Rad. ononidis.*
Haukstein, blauer—*Cupr. sulf.*
" weisser—*Zinc. sulf.*
Haupotensaat—*Sem. cynosbati.*
Haupt-Magen-Glieder-Balsam —*Mixt. oleos. bals.*
Haupt- und Flusspulver—*Pulv. sternutatorius.*
Hausenblase—*Ichthyocolla.*
Hauslauch, kleiner—*Herb. sedi.*
Hausminze—*Mentha crispa.*

Haussaft—*Sir. spinae cerv.*
Hauswurzel—*Rad. asari, Rad. carlin.*
Hautpflaster—*Empl. anglicum.*
He und Se, Hei und Sei } *Rad. victorial. long et rotund.*
Hebra's Selbe, Hebräische Salbe } *Ungt. diachyl. Hebrae.*
Hechelwurzel—*Rad. ononidis.*
Hechtsfett—(*Ol. olivarum, Ol. jec-*
Hechtsalbe—*Ungt. cereum.* [*oris.*)
Heckpflaster—*Empl. adhaesiv.*
Hederich—*Herb. hederae.*
Hederichsaft—*Sir. althaeae.*
Heftpflaster—*Empl. adhaesivum.*
Heideckerwurzel—*Rad. tormentillae.*
Heidelbeeren—*Fruct. myrtilli.*
Heidelblumen—*Flor. stoechados.*
Heidennüsse—*Sem. pichurim.*
Heidnisch Wundkraut — *Herb. virg. aureae.*
Heil aller Welt—*Herb. veronic.* oder *Herb. galeops. grand.*
Heilbalsam—*Bals. peruvian.*
Heilblumen—*Flor. stoechados.*
Heilig Dingpflaster, Heilig Dingschwede } *Empl. saponat., Empl. plumbi simpl.*
Heiligen Bitter—*Spec. hierae picrae.*
Heiligengeistwurzel—*Rad. angelicae.*
Heiligenpflaster—*Empl. fuscum.*
Heilige Rübe—*Rad. bryoniae.*
Heilig Holz—*Lign. guajaci.*
Heitöl—*Bals. peruv., Ol. hyoscyami.*
Heilpflaster — *Empl. plumbi comp., Empl. fuscum.*
Heilpulver—*Pulv. liquir. comp.*
Heilsalbe — *Ungt. plumbicum, Ungt. cereum, Empl. fuscum.*
Heilschwedenpflaster—*Empl. fuscum.*
Heilstein—*Cuprum aluminat.* (!)
Heilwasser—*Aq. vulnerar., Aq. carbolis.*
Heil- und Zugpflaster—*Empl. plumbi comp.*
Heimbutfas—*Fruct. cynosbati.*
Heinrich, guter, stolzer—*Herb. chen-*
Helder—*Flor. sambuci.* [*opodii.*
Helenenwurzel—*Rad. helenii.*
Helgolander Pflaster—*Empl. fuscum.*
Helmchen, Helmerchen *Flor. chamomillae.*
Henig—*mel.*
Herbstrosen—*Flor. malvae arborei.*
Herdrauch—*Herb. fumariae.*
Herrmanns Thee—*Spec. St. Germain.*
Hermeln—*Flor. chamomill. vulg.*
Herzbetonien—*Herb. betonicae.*
Herzklee—*Herb. meliloti.*
Herzgespann—*Herb. ballotae.*
" salbe—*Ungt. rorism. comp.*
" tropfen — *Tinct. carminativa.*
" wasser—*Aqua. aromatica.*
Herzkraut—*Herb. melissae.*
Herzleberkraut—*Herb. hepaticae.*
Herzminze—*Herb. pulegii.*
Herzpulver, graues — *Pulv. liquir. comp.*
Herzspanöl—*Ol. chamomill. aeth. dil.*
Herzspansalbe—*Ungt. rosmar. comp.*
Herzspantropfen—*Tinct. aromatica.*
Herztinktur, Herztropfen } *Tinct. cinnamomi.*
Heublumen—*Flor. meliloti.*
Heusamen, Griechischer — *Sem. foeni graeci.*
Hexenkraut — *Hypericum perforat., Datura stramon. !*
Hexenmehl, Hexenpulver } *Lycopodium.*
Hexenrauch—*Oliban.* mit *Asa foetida.*
Hexenstein—*Argent. nitric. !*
Hexenwurzel—*Rhiz. filicis.*
Hickerpicker—*Spec. hierae picrae.*
Hick und Hack—*Tacamahaca.*
Himbeersaft—*Sir. rubi idaei.*
Himmelbrand—*Flor. verbasci.*
Himmelbrandsalbe—*Ungt. flavum.*
Himmelschlüssel—*Flor. primul. veris.*
Hinfen—*Fruct. cynosbati.*
Hinfenkörner—*Fruct. cynosbati.*
Hirschbrunst—*Bolet. cervinus.*
Hirschfett, Hirschtalg—*Sebum.*
Hirschgeil—*Liq. ammonii carb. pyro-oleos.*

Hirschgeiltropfen—*Tinct. castorei.*
Hirschhorn, flüssiges—*Liq. ammoniae carb. pyrool.*
" gebrannt—*Cornu cervi ust., (Conchae ppt.)*
" geraspelt—*Cornu cervi rasp.*
" präp. — *Cornu cervi ust., (Conchae praep.)*
Hirschhorngeist, -spiritus, -tropfen—*Liq. ammon. caust.* odor *Liq. ammon. carb. pyrooleos.*
Hirschornöl—*Ol. animale foet.*
Hirschholnsalz—*Ammon. carbonicum.*
Hirschinselt, Hirschunschlit } *Sebum.*
Hirschkörner—*Bolet. cervinus.*
Hirschlunge—*Lich. pulmonar.*
Hirschtalg—*Sebum.*
Hirschwurzel — *Rad. gentian., Rad. polypod.*
Hirschzunge—*Herb. scolopendrii.*
Hirtentäschlein — *Herb. bursae past-oris.*
Hitschel—*Flor. sambuci.*
Hitschelsaft—*Succ. sambuci.*
Höllenstein—*Argent. nitric. fusum!*
Hofflatken—*Fol. farfarae.*
Hofflatkensaft—(*Sir. althaeae.*)
Hoffmann's Geist—*Spirit. athereus.*
" Gichttropfen } *Mixt. oleos.*
" Lebensbalsam } *bals.*
" Gichttropfen, braune — *Elix. aurant. comp.*
" schmerzstillende Tropfen—*Spir. aethereus.*
" Tropfen—*Spir. aethereus.*
Hofraute—*Herb. rutae.*
Hohldürekraut—*Herb. galeops. grandifl.*
Holländisches Pflaster—*Empl.fuscum.*
Holder, Holler, Hollunder } *Sambucus nigra.*
Hollundermus—*Succ.sambuci inspiss.*
Hollunderpflaster — *Empl. plumbi simpl.*
Hollunderschwamm—*Fungus sambuci*
Hollunderthee—*Flor. sambuci.*
Holz, heiliges—*Lign. guajaci.*
Holzessenz—*Tinct. pini comp.*
Holzessig, Holzgeist, Holzsäure } *Acidum pyrolignosum.*
Holzthee, Holztrank } *Spec. lignorum.*
Holztinctur, Holztropfen } *Tinct. ligni guajaci.*
Honig—*Mel.*
Honigpflaster—*Empl. plumbi comp.*
Honigsalbe—*Ungt. cereum.*
Honigsugen, witte—*Flor. lamii albi.*
Hopfen—*Humulus lupulus.*
Hopfen, spanischer—*Herb. orig. cret.*
Hopfenöl (Spanisch) — *Ol. origani cretici.*
Hoppenthaler Pflaster—*Empl. fuscum*
Hornthee—*Carrageen.*
Hospitalpflaster—*Empl. fuscum.*
Huder—*Herb. hedcrae.*
Hühneraugenpflaster — *Cerat. aeruginis.*
Hühnerdarm, Hühnerklee, Hühnerkraut } *Herb. serpylli.*
Hühnerdarmöl—*Ol. hyoscyami.*
Hühnernessel—*Flor. lamii alb.*
Hühnernelkenthee—*Flor. calendulae.*
Hühnerpolei—*Herb. pulegii.*
Hütscheln, Hütschelblumen } *Flor. sambuci.*
Huflandisches Kinderpulver — *Pulv. magn. c. rheo.*
Huflattig, Huflattigblätter } *Fol. farfarae.*
Huflattigsaft—(*Sir. althaeae.*)
Huflor—*Ol. laurinum.*
Hufsalbe—*Ungt. cantharid. vaselin.*
Hummelöl—*Ol. origani.*
Hundeblumenkraut—*Herb. taraxaci.*
Hundefett—*Adeps.*
Hundequecken, Hundsgraswurzel } *Rad. graminis.*
Hundsveilchen—*Herb. viol. tricolor.*
Hundszungenwurzel—*Rad. cynoglossi, (Rad. consolid.)*
Hungerkraut—*Herb. viol. tricol.*
Hunnenschlit—*Rad. gentianae.*

Hurtig und geschwinde—*Linim. ammoniat., Liq. ammon. caust. !*, auch *Tinct. guajaci ammon.*
Hustenblätter—*Fol. Farfarae.*
Hustenelixir—*Elix. c succo lign.*
Hustenpulver—*Pulv. liquir. comp.*
Hustenthee—*Spec. pectorales.*
Hustentropfen—*Elix. pectorale.*
Ibisch—*Althacae.*
Igelfett—*Adeps, Ol. jecoris.*
Imber—*Rhiz. zingiberis.*
Immergrün—*Fol. gaultheriae., Herb. pyrolae.*
Immerwährendes Zugpflaster—*Empl. canth. perp.*
Immortellenthee—*Flor. stoechados.*
Incenz—*Olibanum.*
Indischer Balsam—*Bals. peruv.*
Ingber, Ingwer } *Rhiz. zingiberis.*
Instrianswurzel—*Rad. gentianae.*
Inzian—*Rad. gentianae.*
Iritzenwörteln—*Rad. irid. flor.*
Irländisch Moos—*Carragcen.*
Isernkraut—*Herb. verbenac.*
Isländisch Moos—*Lich. islandic.*
" Perlmoos—*Carrageen.*
Isop—*Herb. hyssopi.*
Iwisch—*Rad. althaeae.*
Jachandelbeeren—*Fruct. juniperi.*
Jachandelöl—*Ol. (ligni) juniperi.*
Jachandelsaft—*Succus juniperi.*
Jachimsalbe—*Empl. plumbi comp.*
Jamaikapfeffer—*Fruct. amomi.*
Japanische Erde—*Catechu.*
Je mehr je lieber, Je länger je lieber } *Herb. viol. tricol.*
Jerusalemer Balsam — *Tinct. benz. comp.*
Jesuitenbalsam—*Bals. copaivae.*
Jesuitenpulver—*Cort. chinac pulv.*
Jesuiten-Thee—*Herb. chenop. ambr.*
Jibs-Jakob—*Oxymel aeruginis.*
Johandel—*Juniperus.*
Johannisbeeren—*Fruct. ribium.*
Johannisblumen—*Flor. hyperici, Flor. primulae, Flor. arnicae.*
Johannisbrod—*Siliqua dulcis.*
Johannishäupteln—*Rad. victorial. rotund.*
Johanniskerze—*Verbascum.*
Johanniskraut—*Herb. hyperici.*
Johannisöl—*Ol. hyperici.*
Johanniswurzel — *Rad. arnicae, Rad. artemis., Rhiz. filicis.*
Josefskraut—*Herb. hyssopi.*
Juchhannelbeeren—*Fruct. juniperi.*
Juchtenol—*Ol. rusci.*
Juckpulver — *Talcum carbolic.* oder *salicylic.*
Judasohren—*Fungus sambuci.*
Judaskirschen—*Fruct. alkekengi.*
Judenkraut—*Herb. millefolii.*
Judenohren—*Fungus sambuci.*
Judenpech—*Asphaltum.*
Judenpfeffer—*Fruct. amomi.*
Juffern—*Flor. rhoeados.*
Jullap—*Rad. jalapae.*
Jungfernblume—*Flor. stoechad.*
Jungfernglas, Jungferneis } *Gracies Mariae.*
Jungfernhaar—*Herb. adianthi aurei,* oder *Herb. capill. vener.*
Jungfernhonig—*Mel album.*
Jungfernihs—*Glacies Mariae.*
Jungfernkraut—*Herb. capill. vener.*
Jungfernmilch, Jungfernteint } *Aq. rosar. 12 et Tinct. benzoës 1.*
Jungfernöl—*Ol. olivar. alb.*
Jungfernschwefel—*Sulfur. sublimat.*
Jungfernwachs—*Sulfur. sublimat.*
Jungfernwachs—*Cera alba.*
Kaddigbeeren—*Fruct. juniperi.*
Kaddigholz—*Lign. juniperi.*
Kaddigmuss—*Succ. junip. insp.*
Kadeöl—*Ol. cadinum.*
Käferpflaster—*Empl. cantharid.*
Käfersalbe—*Ungt. cantharid.*
Kälberkropf—*Herb. chaerophylli sylvestr.*
Kaemel—*Fruct. carvi.*
Käsemalven, Käsekraut, Käsepappel, Käsleinkraut } *Herb. malvae.*
Kajennepfeffer—*Fruct. capsici.*

Kailkenblume—*Flor. sambuci.*
Kailkenmuss—*Succ. sambuci insp.*
Kaiserpillen—*Pil. laxantes.*
Kaiserramh—*Pulv. fumalis.*
Kaiserwasser—*Spir. odoratus.*
Kakaobutter—*Ol. theobromae.*
Kalappusöl—*Ol. cajeputi.*
Kalfonien—*Colophonium.*
Kalittenstein, Galitzenstein, blau — *Cupr. sulfur.;* weiss—*Zinc. sulfur.*
Kalkwasser—*Aqua calcis.*
Kalte Quinte—*Colocynthides.*
Kalmus—*Rhiz. calami.*
Kalmusstein—*Lap. calamin. pracp.*
Kamelgen—*Flor. Chamom. vulg.*
Kameelstein—*Lap. calaminar.*
Kamellen—*Flor. chamomilac vulg.*
Kamferbalsam—*Linim. saponis.*
Kamfergeist—*Spir. camphorat.*
Kamferkraut—*Herb. absynthii.*
Kamferlinement — *Linimentum ammoniato-camphorat.*
Kamferpflaster — *Empl. fuscum camphorat.*
Kamfersalbe, flüchtige — *Linimentum ammoniato-camphorat.*
Kamillen, grosse oder römische—*Flor. chamom. rom.*
Kamillenthee—*Flor. chamomil. vulg.*
Kammfett — (*Adeps suill.*, auch *Ol. olivar.*)
Kanarienholz—*Lign. juniperi, Lign. santal. alb.*
Kanariensamen—*Sem. canariense.*
Kandis—*Sacchar. crystallisatum.*
Kanehl—*Cassia cinnamom.*
" weisser—*Canella alba.*
Kanehlblüthen—*Flor. cassiae.*
Kanisterpflaster—*Empl. oxycroc.*
Kapillärsaft—(*Syr. flor. aurantii.*)
Kapuzinerpulver, Kapuzinersamen } *Pulv. insectorum.*
Kapuzinersalbe, graue — *Ungt. hydrarg. cin. dil.*
" rothe—*Ungt. hydr. rubr.*
" weisse—*Ungt. hydr. alb.*
Karbe—*Fruct. carvi.*
Kardebenedikten, Kardiktenkraut } *Herb. cordui bened.*
Kardebenediktenwurzel — (*Rad. gentianae.*
Kardemum—*Cardamomum.*
Karlsbader Tropfen—*Tinct. rhei. vin., Tinct. chin. comp. aa.*
Karmelitergeist, Karmeliterwasser } *Spir. melissae.*
Karmeliterpflaster—*Empl. fuscum.*
Karmeliterstein—*Zinc. sulfur. crud. !*
Karmillen—*Flor. chamom. vulg.*
Karminativtropfen — *Tinct. carminativ., Tinct. zedoariae comp.*
Karnissel, weisser—*Zinc. sulfur. !*
Karthäuserthee—*Herb. chenopodii.*
Karthamine—*Flor. Carthami.*
Kassienrinde—*Cassia cinnam.*
Kastanienthee—*Fol. jugland. reg.*
Katzenbaldrian—*Rad. valerianae.*
Katzenfrass—*Lign. sassafras.*
Katzengamander, Katzenkraut } *Herb. mari veri.*
Katzenminze—*Nepeta cataria.*
Katzenpfötchen, Katzentäpple } *Flor. stoechados, Flor. gnaphal. dioic.*
Katzenschwanzblüthe — *Flor. millefolii.*
Katzenwurzel—*Rad. valerianae.*
Keilkenblumen—*Flor. sambuci.*
Kelken—*Sambucus.*
Kellerhalsrinde—*Cort. mezerei.*
Kermesbeeren—*Fruct. phytolaccae.*
Kerve—*Fruct. carvi.*
Kerzenblumen—*Flor. verbasci.*
Kerzenkraut—*Fol. verbasci.*
Kibitzpulver—*Tartar. depur.*
Kibitzsalbe—*Ungt. plumbi.*
Kiefersprossen—*Turiones pini.*
Kiem—*Fruct. carvi.*
Kienlen—*Herb. serpylli.*
Kienöl—*Ol. pini, Ol. terebinth.*
Kimmel—*Fruct. carvi.*
Kinderfenchel—*Fruct. foenic.*
Kinderkorallen—*Sem. paeoniae.*
Kinderpuder—*Lycopodium.*
Kinderpulver — *Pulv. magnesiae c. rheo.*
Kindersaft—*Syr. rhei.*

MONTHLY REVIEW.

Phytochemistry and Pharmacognosy.

Alkaloidal Value and Assay of Ipecac.—During the past year nine lots of Rio ipecac and twenty-two lots of Carthagena ipecac were assayed. The process employed was that of Keller, substituting ether for the ether-chloroform mixtures, this having been found to ensure the extraction of an almost pure alkaloid. The figures show both gravimetric and volumetric result and these agree exceedingly well throughout. Rio ipecac varied from 2.00 to 3.14 p. c. of emetine, with an average of 2.60 p. c.; Carthagena ipecac ranged from 1.80 to 3.46 p. c. of alkaloid with an average of 2.77 p. c. The proposed adoption of an ipecac standard, minimum of 2.44 p. c. emetine, and assay-method for the next German pharmacopœia is endorsed. The method to be used is a modification of that of Keller, and the use of ether-chloroform instead of ether is criticised. Also, it is asserted that, since not every apothecary possesses a correctly standardized volumetric acid solution, it would have been better to direct the weighing of the alkaloidal residue. Still better would have been the adoption of the extremely simple process of the Japanese Pharmacopœia, which requires at least 2.5 p. c. alkaloid, determined as follows: Upon three gm. of powdered ipecac, contained in a flask, are poured 50 cc. of alcohol and the total weight of drug, flask and alcohol, determined. The flask is now connected with a return condenser and heated on a water-bath for two hours. When cool, alcohol is added to bring back to the original amount. 25 cc. are filtered off, evaporated, the residue taken up with about 10 cc. dilute (1+9) sulphuric acid, and after adding 2 cc. Mayer's solution, shaken thoroughly. When filtered, this filtrate must become turbid on the addition of more Mayer's reagent.

[Caesar & Loretz, Geschäftsbericht, Sept. 1899.] *W. A. P.*

Amount of Filicic Acid in Male Fern.—That soil and climate have a greater influence upon the filicic acid content of male fern than has time of collection, is again demonstrated by an extended series of examinations of drugs obtained from various sources. Soil of volcanic origin produces the richest varieties; after this a schistic soil seems best adapted. While the better varieties of rhizomes contain 5.80 to 9.57 p. c. filicic acid and 19.20 to 31,29 p. c. impure filicin, a rhizome collected in the Black Forest in the fal contained but 10.45 p. c. impure filicin and gave no reaction for filicic acid.

[Caesar & Loretz, Geschäftsbericht, Sept. 1899.] *W. A. P.*

Standardization of Ergot.—The commission engaged upon the revision of the German pharmacopœia having proposed a minimum requirement of 0.15 p. c. cornutin, Keller, for ergot, Caesar & Loretz publish a series of valuations showing that it will not be difficult to meet this requirement.

Nine lots of good quality of ergot ranged from 0.190 to 0.350 p. c., with an average of 0.240 p. c. of cornutin, determined by Keller's process. Three poor grades assayed 0.078, 0.157 and 0.157 p. c. cornutin.

[Caesar & Loretz, Geschäftsbericht. Sept. 1899.] *W. A. P.*

Sophistication of Peru balsam and Gum Sandarach.—Karl Dieterich states that he was able definitely to demonstrate the adulteration of a specimen of balsam of Peru and one of sandarach by means of his recently published quantitative valuations of resins and balsams. Qualitative examinations as formerly practiced would have put their purity under suspicion without enabling the analyst to pronounce a definite opinion. While sandarach should show an acid number of 140, the sample of Neogada sandarach resin in question was shown to be adulterated with resin by its acid number, of 174—175.5 as well as by other tests.

A balsam Peru had a saponification number of 219, against a normal of 240, and contained 58.7 p. c. of cinnamein instead of a minimum of 65 p. c. and certainly was adulterated, probably with castor oil.

[Pharm. Ztg., 44, p. 564; from Chem. Centralbl., 1899, 2, p. 570.] *W. A. P.*

The Quality of Kino.—During the past year nine lots of kino were examined with the following results:

	1	2	3	4	5	6	7	8	9
Soluble in 90 p. c. alcohol	p. c. 97.94	p. c. 97.60	p. c. 97.24	p. c. 96.67	p. c. 96.74	p. c. 97.70	p. c. 93.54	p. c. 97.43	p. c. 89.67
Soluble in water..	86.00	97.07	96.48	97.57	95.86	91.43	89.07	96.99	90.89
Tannin	60.38	59.31	53.17	47.60	58.51	58.32	55.20	52.73	43.82
Ash	2.79	1.26	0.77	1.11	1.68	0.53	0.91	0.80	6.23
Moisture	12.24	17.57	17.11	16.91	17.24	17.72	8.51	10.87	12.18

Nos. 1—8 are the best commercial varieties obtained from *Pterocarpus marsupium* and *P. erinaceus*. No. 9 is an undetermined African kino. The price of kino is no criterion of quality, lots having been found superior to others offered at three times the price. All kino offered for sale by Caesar & Loretz contains at least 53 p. c. tannin, is soluble in water or in 90 p. c. alcohol to the extent of 96 p. c. and its ash does not exceed 1.25 p. c.

[Caesar & Loretz, Geschäftsbericht, Sept. 1899.] *W. A. P.*

Ash-content of Myrrh.—While it is not difficult to obtain myrrh in select pieces with a maximum ash content of 6 p. c., as required by the Phar. Helv. III, it is not possible to powder such large pieces, whether dried over lime, or by means of a gentle heat, nor even in cold winter weather. The smaller grains, no matter how carefully selected, will be found to contain 10—12 p. c. ash. The lowest percent of ash in finely powdered myrrh was 8 p. c. [Caesar & Loretz, Geschäftsbericht, Sept. 1899.] *W. A. P.*

The Valuation of Digitalis.—Caesar and Loretz, in their annual report, call attention to an error in the rendering of their assay-method for digitalis

as given in their report of last year.* The directions should read: 28 gm. powdered digitalis leaves, contained in a 400 cc. flask, are macerated with 280 gm. dilute alcohol, sp. gr. 892, for three hours with frequent shaking, and then filtered through an 18 cm. filter. 207 gm. of the filtrate (representing 10 gm. of drug) are evaporated on a waterbath, with frequent stirring, until the residue weighs about 25 gm. and then sufficient water added to bring the weight of the liquid to 222 gm. To this liquid is added 25 gm. solution of lead subacetate and the assay completed as given in last years report.*

Again an extended series of assays of digitalis is given, from which is concluded: 1. Agreeing with last year's experience, leaves from the Harz district remained of constant value up to the middle of September, after that the digitoxin content decreased considerably. 2. Excluding specimens collected for experimental purposes, the shipments received from June 15 to August 15 assayed from 0.205 to 0.400 p. c. pure digitoxin, with an average of 0.298. A higher yield than 0.400 p. c. has not been found for three years. It has not been difficult to supply a drug with a constant value of 0.300 p. c. of pure digitoxin. 3. Leaves taken from flowering plants contained about 10 p. c. less digitoxin than the leaves taken from plants in their first year's growth and without flowers. Soil and altitude seem to affect the digitoxin content to a considerable extent. 4. When cultivated, it was found that the leaves of the first year's growth contained little digitoxin, while in leaves collected in the second year from plants not in bloom the amount is much increased. 5. As regards the keeping quality of the drug, when kept in bales with ordinary care and protected from light, practically no deterioration could be detected when kept for one year.

The proposition of the commission of the German Apothecaries' Society to introduce into the new edition of the German Pharmacopœia only a qualitative determination of digitoxin, according to Keller's plan, is commended as safe and conservative in view of the insufficient data regarding a normal amount contained in the plant.

[Caesar & Loretz, Geschäftsbericht, Sept. 1899.] *W. A. P.*

The Examination of Balsam of Peru.—In the annual report of Caesar & Loretz are reported a series of examinations of balsam of Peru carried out by Dr. Fromme. The recently published methods of Prof. Thoms were used with some minor modifications which are given. Thirteen specimens were obtained from reliable sources, while the purity of two samples was in doubt. The samples of known purity ranged in specific gravity, at 15° C., from 1.137 to 1.154. Treatment with nitric acid in the presence of petroleum benzin usually produced a pure yellow mass, in three cases a brownish color appeared and in one case the mass became greenish-yellow.

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* Pharm. Review, 16, p. 434.

The cinnamein varied from 57.80 to 66 p. c., only two specimens being below 60 p. c., while five were above 64 p. c. The ester number varied from 229 to 244. The resin amounted to 16 to 24.5 p. c. The two samples, the purity of which was doubted, had a sp. gr. of 1.149 and 1.156, nitric acid produced a greenish-yellow coloration, the cinnamein amounted to 61.49 and 56.18 p. c., its ester number was 212 and 215 and the resin was 19.47 and 22 p. c. Little value is attached to the estimation of resin; while the following data are believed to be of value: 1. The specific gravity should be from 1.136 to 1.50. 2. In the nitric acid test, petroleum benzin free from benzole, with 5 drops of nitric acid sp. gr. 1.36, should be used. The entire mass should assume a yellow to brownish-yellow color. 3. The cinnamein should amount to at least 60 p. c. 4. This cinnamein should have an ester number of at least 236.

[Caesar & Loretz, Geschäftsbericht, Sept. 1899.] *W. A. P.*

Chemistry of Cascara.—In addition to the constituents already recorded, Leprince has isolated chrysarobin, chrysophanic acid and emodin from the bark of *Rhamnus purshiana*. It is evident that those constituents play an important part in the therapeutic action of the bark.

[Ph. Journ., 63, p. 295; from C. r., 129, p. 60.] *E. K.*

Iodine in Sea-water.—Continuing his researches on the occurrence of iodine in its various combinations in sea-water, A. Gautier has found that, although the total iodine present in water collected at different depths in the Mediterranean does not show much variation in quantity, the condition in which it is present varies greatly. In the lowest depths the amount of mineral iodides is considerable, while that of insoluble organic iodine is relatively small; surface water collected at the same spot contained no mineral iodine, but a relatively large amount of insoluble organic iodine. Thus surface water gave: Insoluble organic iodine, 0.286; soluble organic iodine, 1.960; and inorganic iodine, *nil;* total iodine, 2.246 parts per million. At a depth of 880 meters the figures obtained were: Insoluble organic iodine, 0.100; soluble organic iodine, 2.130; and inorganic iodine, 0.150; total iodine, 2.380 parts per million. At 980 meters below the surface the following proportions were present: Insoluble organic iodine, 0.065; soluble organic iodine, 1.890; inorganic iodine, 0.305; total iodine, 2.260 parts per million. Thus, as organized life becomes more plentiful towards the surface, so the amount of insoluble organic iodine increases and the inorganic salts of the haloid decrease in quantity.

[Ph. Journ., 63, p. 295; from C. r., 129, p. 9.] *E. K.*

Acidimetry of Alkaloids.—For the volumetric determination of alkaloids, E. Faliéres advocates the use of an ammoniacal solution of cupric oxide for the titration of free acid, since as soon as the last trace of uncombined acid is used up, an evident turbidity is produced in the solution. The copper

solution is prepared by dissolving cupric sulphate, 10 gm., in about 500 cc. of water, adding ammonia until the precipitate at first formed is nearly dissolved, making up to 1 litre and filtering. The solution is then standardized with $H_2SO_4/10$. To conduct a titration about 0.10 gm. of the alkaloidal substance is dissolved in 20 cc. of $H_2SO_4/10$ solution, the containing glass vessel is stood upon a black background; the standard copper solution is then run in until a permanent turbidity results, indicating the moment when the free acid is neutralized; from the amount thus found the quantity used up by the alkaloid may be deduced. The author has obtained excellent results by this process with sparteine, morphine, codeine, cinchonine, cinchonidine, quinidine, strychnine, conine, atropine, veratrine and brucine. In the case of cinchona, the total alkaloids may be determined in the first extraction since the accompanying impurities do not affect the appearance of copper oxide precipitate.

[Ph. Journ., 63, p. 295; from C. r., 129, p. 110.] *E. K.*

Piralahy Rubber.—Piralahy or vahaelahy rubber is the product of a new species of *Landolphia*, named *L. perieri* by H. Jumelle. It is a native of the forests of Madagascar. The caoutchouc is described as being of excellent quality, containing but 5.5 percent of resin. The latex is obtained by the natives by cutting the climbing stems and allowing them to drain into suitable vessels, then coagulating it with lemon juice or crushed tamarind fruit. During the dry season but little sap is obtained, but this coagulates spontaneously; during the rainy season it is much clearer, but gives but little caoutchouc, only about 6 percent of the juice. The latex has a sp. gr. of 0.996, which is lower than that of the most rubber-producing plants. The density of the dry caoutchouc is 0.910, whereas that of Para rubber is 0.920. The latex contains but little solid matter besides caoutchouc, neither starch nor sugar being present. The whole of the caoutchouc is not coagulated on boiling, nor is it readily precipitated by alcohol. Acids, and most salts, such as sodium chloride and magnesium sulphate, which do not coagulate ordinary rubber, at once precipitate the caoutchouc of *Landolphia*.

[Ph. Journ., 63, p. 295; from C. r., 129, p. 349.] *E. K.*

Quantitative Determination of Malic Acid. — Hilger has found that palladium chloride is very well suited for the quantitative determination of malic acid. The palladium chloride is somewhat expensive but can be almost all recovered from the solutions. The slightly alkaline solution to be tested for malic acid is treated with a 2 percent palladium chloride solution, boiled for 10 minutes and further heated for 20 to 25 minutes, the precipitate of reduced metallic palladium collected in an Allihn-tube by means of a force pump, heated in a current of carbon dioxide and weighed. 0.294 grs. of Pl. correspond to 1 gr. of malic acid.

[Pharm. Ztg., 44, p. 685.] *O. S.*

Practical Pharmacy.

Pointers on Percolation.—Under the above title J. F. Hostelley describes a very simple device which serves the purposes of preventing an overflow during percolation, reclaiming menstrum from drug marc, and a filter.

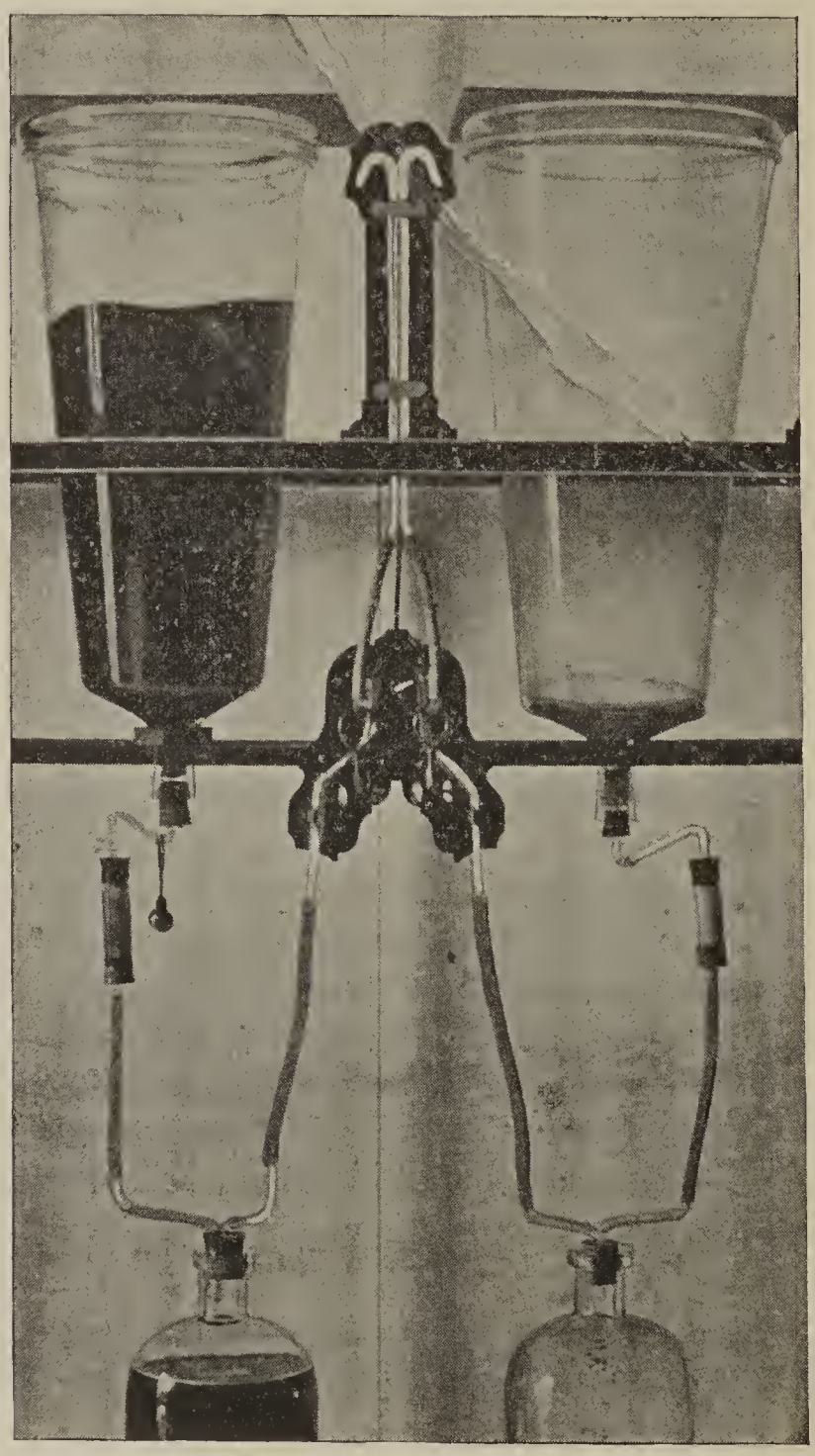
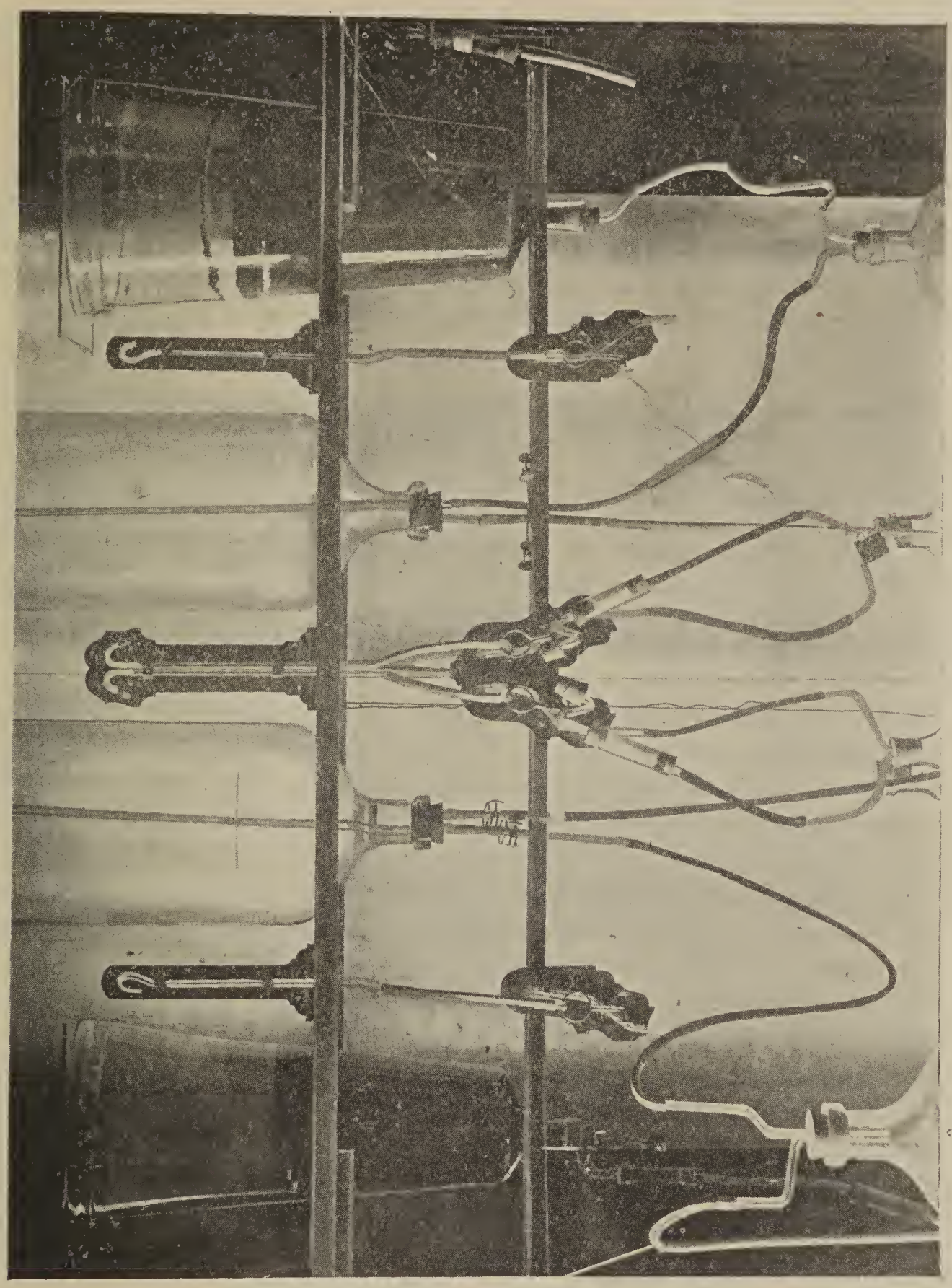


Figure 1 shows the device attached to an ordinary percolator. The tube at the exit of the percolator is enlarged to accomodate a plug of cotton which serves as a filter. The percolate receiver is an ordinary bottle fitted with a double perforated stopper. Glass tubes connect the receiver with the percolator and overflow device, which latter is nothing more than a tube, the upper end of which is above the menstrum in the percolator. Pinchcocks applied to rubber joints may be applied to temporarily stop percolation.

When the drug in the percolator is exhausted, the excess menstrum is reclaimed by connecting the tube previously connected with the overflow device, with an inverted bottle filled with water. The latter also being connected with an empty receiver below. The receiver below the percolator also being changed. The flow of water from the inverted to the upright bottle, causing a partial vacuum in the new percolate receiver, thus affording an extemporaneous force filter as well. [Merck's Report, 8, p. 298.] *W. O. R.*

Kolamilk and Kolatobacco.—S. Bergenau proposes to popularize kola as a general beverage by the use of a preparation prepared as follows: 500 grm. of bitterless powdered kola nut is allowed to macerate twelve



hours with 5 litres of cold water. The mixture is then boiled for 15 minutes, the liquid decanted, filtered and then sterilized. The sterilized extract is added to enough sterilized skim milk to make 100 litres.

Cigars are impregnated with kola flavor by exposing the tobacco, previous to rolling, to the vapors, from a bath containing kola nuts in alkaline liquid. Chewing tobacco is made by incorporating some of the above alkaline extract. [Pharm. Zeitg., 44, p. 670.] *W. O. R*

Aluminium Caseïnate.—R. Meyer gives a method of preparation for the above compound which has been found very serviceable in intestinal cartarrh in small children. To prepare aluminium caseïnate, milk is heated to 62° C. for some time, to remove albumen, then sterilized, and then *Liquor aluminii acetici*, Ph. G. III. added, thus precipitating the casein in combination with aluminium. The precipitate is washed with water, then alcohol to remove water, and finally with ether to remove fat. The precipitate is carefully dried and powdered. The dose for children is 0.03 grm. per hour, and adults 0.25 to 0.30 grm. per hour.

[Pharm. Zeitg., 44, p. 683.] *W. O. R.*

Testing and Assay of Pastilli Hydrargyri Oxycyanati.—At the recent meeting of the Verein d. Naturforscher und Aerzte, Pharmacy and Pharmacognosy Section, in Munich, a paper of the above title was read by v. Pieverling. The amount of mercuric oxycyanide in pastiles, and other ingredients are determined by simple solubility tests. Insoluble coloring matter, alkali, carbonates, bicarbonates and cyanides, and mercuric chloride, are impurities for which tests are given.

[Pharm. Zeitg., 44, p. 670.] *W. O. R.*

A Substitute for Poultices.—M. I. Willert gives a working formula for trade preparations selling under the name of "antiphlogistine" and "antithermaline." Both of the above preparations have been found serviceable by general practitioners as substitutes for poultices plasters, ointments and cerates. They require no previous treatment before application, do not require renewal within twenty-four to forty-eight hours; are not greasy or dirty; and give relief from pain, and reduce inflammation. 1000 gm. of kaolin, sifted, sterilized at 100° C. is heated with 1000 gm. of glycerin, under constant stirring during about thirty minutes. When nearly cool 100 100 gm. of boric acid, 1 gm. each of oil of peppermint and oil of wintergreen, and 2 gm. of oil of eucalyptus are added. Preserve the mixture in fairly tight glass boxes. Other ingredients for special local treatment may be incorporated as desired. [Am. Jour. Pharm., 71, p. 478.] *W. O. R.*

Sapo Mollis or Soft Soap.—W. L. Scoville at the recent meeting of the Massachussetts Pharmaceutical Association, mentioned two precautions to be borne in mind in order to obtain well made soft soap. Commercial caustic potash should be considered as 78—86 percent and a correspondingly larger amount should be employed. The alkali solution should be added very gradually and in separate portions (three) stirring after each addition five, ten and fifteen minutes respectively. Drying oils (linseed type) yield a more satisfactory soap than do non-drying oils, as cottonseed or olive oil, although the latter have a more agreeable odor.

[West. Drug., 21, p. 487.] *W. O. R.*

Lime as Preservative of Chloroform.—D. Brown takes exception to the recommendation of Newman and Ramsay (Lancet, 1897, favoring the use of lime for purifying and preserving chloroform. Chloroform when mixed with slacked lime, showed decomposition, and reduction in specific gravity after standing forty-eight hours, exposed to sunlight. A mixture of the above to which alcohol had been added, showed changes within five days. Chloroform alone, showed no decomposition after standing under the above conditions, several weeks.

[Pharm. Jour., 61, p. 699.] *W. O. R.*

Physiology and Therapeutics.

Soluble Metallic Silver in Therapy.—Horatio C. Wood, Jr., contributes the following: "The idea of a solution of metallic silver seems something so out of our ordinary conception of the order of things that the first impulse is to disbelieve. But when the great difference in the physical properties of the allotropic forms of other elements that exist in different states is recalled —the contrast, for example, between the diamond and graphite—the idea seems less impossible. The fact that silver occurs in several allotropic modifications, one of them being soluble, was demonstrated a decade ago by M. Carey Lea,[1] who in 1889 described three new forms of silver. One of these, when dry, had almost exactly the color and appearance of gold; another, of a bluish color when dry, became brown when moist; the third, which was of a lilac or a greenish-blue color, he found to be freely soluble in water, the resulting solution being a bright red. For a description of the properties and the oft-times beautiful changes which these forms of silver undergo, the reader is referred to the very interesting paper written by Lea.

The means by which this product was first obtained was given as follows: To 200 cc. of a 10 percent solution of silver nitrate add 200 cc. of a 30 percent solution of ferrous sulphate, and 280 cc. of a 40 percent sodium citrate solution; stir, allow it to stand until the lilac-colored precipitate has settled, and decant off the fluid. The precipitate is soluble in pure water, but the addition of certain salts, as ammonium nitrate, sodium sulphate, etc., to the solution precipitates it. Advantage is taken of this fact to purify the precipitate by washing it on a filter paper with a saline solution. Several analyses of the washed precipitate showed 97.27 percent of pure silver. Other methods of preparation were subsequently described by Lea.[2]

The use of silver and its salt in medicine both locally and internally is a practice almost as old as medicine, and since the discovery of the microbic nature of many affections the rationale of the local use of silver has been

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[1] Amer. Jour. of Science, 37, 1889, p. 479.
[2] Amer. Jour. of Science, 41, 1891, p. 483.

shown to be due to its considerable antiseptic properties. Credé,[3] who has been probably the most ardent advocate of the metal, having been for some time searching for a form of silver suitable for internal administration—that is, one which might be absorbed in some considerable quantity—had his attention called to the discovery of Lea, and immediately proceeded to make trials of this soluble form of silver.

Lottermoser and Von Meyer[4] have shown that if albumin is added to the solution, the silver is not precipitated by sodium chloride solution, and Credé has shown that it is dissolved by the peritoneal fluids. It is soluble in 20 parts of water.

It is by no means a justifiable conclusion that, because silver and many of its salts possess antiseptic properties, the allotropic modifications of silver will be endowed with the same virtues—it will be remembered how almost inert are the allotropic forms of phosphorus in comparison with the virulence of the ordinary form of this element—and I have been unable to find any scientific or experimental evidence to prove that soluble silver possesses powers similar to the insoluble variety. Nevertheless, the clinical evidence, so far as it goes, which is not very far, seems to render it probable that this preparation does possess some germicidal virtue, either direct or indirect; but a bacteriological study of its powers is woefully conspicuous by its absence. Soluble silver has been used enough clinically to show that, at any rate, it is not actively poisonous; and as it is recommended especially in many diseases against which we have no efficient remedy, a trial must be made with propriety.

Credé's[5] idea of the use of *argentum colloidale*, as it is known commercially, is that it acts as a non-toxic, soluble antiseptic, circulating in the blood, and he therefore recommends it especially in such diseases as septicemia, in the septic complications of scarlet-fever, as a prophylactic and curative for peritonitis, and reports a number of cases apparently benefited by this remedy. Schirmer[6] has used it in nine cases diagnosed as cerebro-spinal meningitis, with eight recoveries. Werler[7] has found it useful in chronic furunculosis. These three observers are all whom I know to have reported trials of the drug.

Soluble silver may be given by the mouth in pill-form, or hypodermically as 1 percent solution in doses of 2 to 3 gm., or, as the originator prefers, in the form of inunctions. In the latter case, about 10 gm. of the 15 percent ointment is rubbed in vigorously for at least a quarter of an hour; treatment repeated the next day if necessary.

[Merck's Archives, 1, p. 374.] *E. K.*

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[3] Arch. f. klin. Chir., 55, 1897, p. 861.
[4] J. f. prakt. Chem., 56, 1897, p. 242.
[5] Monatsh. f. Geburt. u. Gynek., 8, 1898, p. 583.
[6] N. Y. Med. Monatsh., 10, 1898.
[7] Therap. Beil., Deut. med. Woch., 1898, p. 73.

Literary.

Books and Pamphlets Received.

Verlag von A. Hartleben—Wien. Pharmaceutisches Lexikon. Verfasst von Doct. et mag. Max von Waldheim.

6. Lieferung, pp. 241—288: Chinoidin—Cortex salicis.
7. Lieferung, pp. 289—336: Cortex sambuci aquaticae—Eisenzucker.
8. Lieferung, pp. 337—384: Eisenzucker syrup—Ferrum alcoholisatum.
9. Lieferung, pp. 385—432: Ferrum carbonicum saccharatum—Galbanum.
10. Lieferung, pp. 433—480: Galbulus—Helleborin.

Illustrated Medical Journal Co.—Detroit, Mich. Over 1000 prescriptions or favorite formulae of various authors, teachers and practicing physicians. The whole being carefully indexed and including most of the newer remedies. 2d edition, revised and enlarged. One vol., pp. 222. 1899.

Verlag von Julius Springer—Berlin. Schule der Pharmacie. Herausgegeben von Dr. J. Holfert, Dr. H. Thoms, Dr. E. Mylius, Dr. K. Jordan. Band V. Waarenkunde. Bearbeitet von Prof. Dr. H. Thoms und Dr. J. Holfert. Ein Bd., pp. IV, 391, mit 194 in den Text gedruckten Abbildungen. Zweite vermehrte und verbesserte Auflage. 1899. M. 6.00.

John Wiley & Sons—New York. Indicators and test-papers. Their source preparation, application and tests for sensitiveness. A résumé of the current facts regarding the action and application of the indicators and test-papers which have been proposed from time to time and are in present use in chemical manipulations, with a tabular summary of the application of indicators. Designed for the use of chemists, pharmacists and students. By Alfred I. Cohn. One volume, first edition, first thousand, pp. 249. 1899.

Author—Madison. The influence of the presence of pure metals upon plants. By Edwin B. Copeland and Louis Kahlenberg. From the Transactions of the Wisconsin Academy of Sciences, Arts, and Letters. Vol. XII, pp. 454—474. Issued August, 1899, in advance of general publication. Pamphlet, pp. 20. 1899.

Author—Madison. Differences of potential between metals and non-aqueous solutions of their salts. By Louis Kahlenberg. Reprinted from the Journal of Physical Chemistry, Vol. 3, No. 6. Pamphlet, pp. 14. 1899.

Author. Camphoric Acid. By William A. Noyes. Sixth paper. Pamphlet, pp. 4. Seventh paper. Pamphlet, pp. 11. Reprinted from the American Chemical Journal.

U. S. Dept. of Agr.—Washington, D. C. Crimson Cover Seed. Division of Botany. Circular No. 18. Pamphlet, pp. 4. 1899.

Reviews.

Die aetherischen Oele, von E. Gildemeister und Fr. Hoffmann. Bearbeitet im Auftrage der Firma Schimmel & Co. in Leipzig. Mit vier Karten und zahlreichen Abbildungen. Verlag von Julius Springer, Berlin, 1899. 8°, pp. 919.

When it was known that Drs. Gildemeister and Hoffmann had been commissioned by Messrs. Schimmel & Co. to write a work on essential oils, it was naturally to be anticipated that the combined scientific and literary attainments of the authors on the one hand, together with the unrivalled facilities and scope that would be afforded them by a firm of such high reputation in this branch of industry on the other hand, would result in the production of a treatise of the greatest excellence and value. The elegant volume which has recently made its appearance not only fulfills the highest expectations that could have been entertained respecting its thoroughness, but, if possible, exceeds them, and can only elicit from those who are interested in the subject of which it treats expressions of unqualified admiration and appreciation. There is, indeed, no work known to the writer in which subjects of scientific and technical interest are so happily blended with the most accurate and complete historical investigations; and these characters not only impart to the work an exceptional interest and value, but they also entitle it to rank as a literary classic.

The plan and purpose of the work are briefly outlined in the preface, from which the following abstract may be given:

"The preparation of essential oils, which was formerly purely empirical, has only in recent decades been placed on a scientific foundation, and this has rendered possible its gradual development as an independent branch of chemical industry. During the transition stage, in which it still exists, those

progressive factories which have been the pioneers in technical and scientific work, as well as those who further utilize the results, have suffered much from competition with inferior and adulterated products; for it must be said with regret that the knowledge requisite for judging and appreciating the quality and purity of the essential oils so largely used for many purposes is not yet so extended as would be desirable for the purposes of industry and trade. The reason for this may be found chiefly in the fact that the results of recent chemical investigations and their practical applications had not yet been brought into a suitable form and made generally available.

The need of a work which should treat the entire subject of the essential oils from a modern standpoint, exhaustively and critically, induced the firm of Schimmel & Co. to request the authors to write a book which should meet these requirements; and having placed at their disposition all the information which had been acquired through many years of industrial work, their task was materially lightened.

Special importance has been attached to the description of the properties of commercially important oils and to those methods of testing which have been found practically valuable, in order to place the consumer in a position to distinguish pure from adulterated oils, and good oils from inferior ones. As rational methods of testing depend upon the physical behavior and the chemical composition of the oils, it was necessary to thoroughly elucidate the results of their scientific investigation. In this connection investigations which can make no claim to permanent value, as also antiquated methods of examination, such as color reactions, etc., have not been considered.

With full recognition of the importance of a historical foundation for such a work, this has received special consideration, and by comprehensive citations of the literature the way has been cleared for further investigation. The authors therefore hope that, although the book is designed chiefly for practical purposes, it will also afford to the scientific investigator a complete survey of all that has thus far been accomplished in this domain, together with the literary references."

The work is divided into three principal parts, namely:

Historical Introduction.

1. The trade in spices and aromatics in antiquity and in the middle ages.
2. The history of essential oils.
3. The history of the methods of distilling and of distilling apparatus.

General Part.

1. Theoretical principles for the production of essential oils by steam distillation.

2. The more commonly occurring constituents of essential oils.
3. The testing of essential oils.
4. A compend of the plants, arranged according to their natural orders, from which essential oils are obtained.

Special Part.

History, origin, manufacture, properties, composition, testing and commercial statistics of essential oils.

The first part of the work, comprising 136 pages, relates, as above indicated, chiefly to the history of essential oils and the crude materials from which they are obtained, and is from the scholarly pen of Dr. Hoffmann. In these chapters a most interesting account is also given of the sources of spices and aromatics, the trade in them, and the routes by which they were brought into commerce from the earliest times. In connection therewith many excellent illustrations are given of the forms of apparatus employed by the ancients for the purpose of distillation, which serve clearly to demonstrate the evolution of the modern still; and these become especially interesting and instructive when contrasted with the large and elaborate apparatus for steam distillation now used in the works of Messrs. Schimmel & Co. The extensive and laborious researches that were necessary for the accomplishment of this part of the task are evident from the numerous citations of literature, which include many works of the old Latin and Greek writers, and information only to be obtained by diligent search through the largest European libraries. The painstaking accuracy and careful discrimination with which this difficultly accessible information has been collated and arranged reflect the broad literary culture and skill of the author and merit the highest praise. With respect to these features there is but one modern scientific work known to the writer which is at all comparable with it, namely, the classical work by Flückiger and Hanbury on the history of drugs,—or Pharmacographia.

The second, or general part of the work, comprising about 150 pages, includes a chapter by the able technical chemist, Dr. C. von Rechenberg, on the theoretical principles of steam distillation in the production of essential oils, and one by Dr. J. Helle on the more commonly occurring constituents of essential oils. The remaining portion of the work, which consists for the most part of monographs of the oils, is presented in an equally masterly manner by the talented chemist, Dr. E. Gildemeister, whose long experience in this branch of

chemical industry has especially fitted him for the task. In this special part there are no less than 422 essential oils individually described, with consideration of their source and history, method of production, properties, composition, tests, and adulterations; the general methods of testing and determination of physical constants forming the subject of a preliminary chapter. In this part of the work also a very valuable feature is the abundant and quite complete citation of the more important literature. On page 842 a slight error may be noted, where the figures 1 and 2, referring to foot-notes, have been wrongly placed.

In addition to a considerable number of excellent illustrations the work is embellished with four beautifully executed maps, whilst the printing and general arrangement leave nothing to be desired with respect to clearness and elegance.

It is evident that a work of this comprehensive character will at once occupy, and long maintain, a supreme position as an authority on the subject of essential oils, and will prove of inestimable value to those who seek information respecting this large class of bodies, either for strictly scientific purposes or from practical and commercial interests. We can finally only express the hope that through an English translation the work may be made available and useful to those unfamiliar with the German language, and thus receive the wider appreciation which it so truely merits; for while enriching this special branch of applied science by a complete summary of existing knowledge, it is also an ornament to its literature.

F. B. Power.

PHARMACOGNOSTISCHE KARTE für die Arzneibücher Europas und der Vereinigten Staaten von Amerika. Bearbeitet von Hermann Schelenz. 2. Auflage. Druck und Verlag von G. Freytag & Berndt. Wien und Leipzig, 1899. Mk. 2.50.

The study of the distribution of medicinal plants, by students of pharmacy, has become to a considerable extent merely the memorization of geographical names by rote. It is not uncommon to meet students but a few years out of the secondary schools who have totally forgotten the location of some of the most common geographical points which are of interest from a pharmacognostical point of view. For this reason, if for no other, it seems imperative, for the intelligent and profitable pursuit of the study of pharmaco-geography,

that the student of pharmacy make use of a good map or atlas. Better still are the so-called pharmacognostical maps of which there are several on the market. Upon these maps it is customary to print the name of the plant-drug in the center of the regions in which it grows and if the map be not too small or encumbered by great numbers of useless geographical names they form a most instructive and interesting aid to the study of pharmacognosy.

The latest candidate for favor in this direction is the second edition of the above-named map by Hermann Schelenz. It is a single chart, about 2 by 3 feet, of the world in Mercator projection. The names of the drugs are printed in red ink. Thus forming a fair contrast with all the colors, used to distinguish the different countries, except the blue and green. In those regions where a given drug is found only in cultivation a special sign or mark precedes its name. If the same mark follows the name then we are to understand that the plant in question grows in cultivation as well as in the wild state. A most valuable feature is the indication by dotted red lines of the routes by which certain drugs reach the important drug marts of the world.

Because of the great variety of medicinal and economic products which are obtained from the Mediterranean Basin and tropical Asia, these isolated and individualized regions are reproduced on a larger scale in the upper corners of the chart. Doubtless on account of lack of full statistics the distribution of medicinal plants in the United States is incompletely recorded.

A very interesting diagrammatic representation of the altitudinal distribution of a number of important plants like the Cinchona, Coca, Vanilla, Rhubarb. etc. is another worthy feature. Finally an alphabetical list of European drugs as well as a list of extra-European drugs with a statement of their distribution over the world constitues a résumé which is of great service.

While this map is open to some criticism it as near perfect as one of this size can be made. The ideal and perfect map indicates the distribution of only a single given plant over the entire world. Such have been produced from time to time notably by Schimmel & Co., but they demand endless time and great expense for their production.

Withal the above map, especially if published in English, should be in the possession of every pharmacist in the land. It would be

wise to back it with cloth and keep it tacked to the wall as a gentle reminder. For the student in pharmacy and the apprentice preparing for examinations it most be most serviceable.

J. O. Schlotterbeck.

PHARMACEUTISCHES LEXICON. Ein Hilfs- und Nachschlagebuch für Apotheker, Aerzte, Chemiker und Naturkenner. Von Dr. Max von Waldheim. Verlag von A. Hartleben in Wien.

Among the encyclopaedias of pharmacy the first one in time, comprehensiveness and worth was the Real-Encyclopaedie by Prof. E. Geissler and Jos. Moeller, commenced in 1886 and completed in 1892, comprising ten large volumes. This great work has been duly reviewed in the pages of this journal during the years 1886 to 1892. It has ever since served as the standard cyclopaedia of pharmacy in the full scope of its theoretical and practical relations.

During the years 1892 to 1896 another less comprehensive and correspondingly much less expensive similar work, the Handwörterbuch der Pharmacie has been published under the editorship of Mag. pharm. A. Brestowsky, then in Vienna, comprising two substantial volumes. In the present year a still more abbreviated cyclopaedia, the Pharmaceutisches Lexicon, edited by Dr. Max von Waldheim in Vienna, has been commenced. It will appear in 20 fascicles. In contrast to the high prices corresponding to the voluminous extent of the two preceding encyclopaedias, the "Lexicon" seems to be destined to meet the demand for handy reference work at a moderate cost and sufficient for the common requirements of the practitioners of pharmacy and medicine. When completed it will make one substantial volume, costing approximately $3.00 and bound $4.00.

The five fascicles thus far issued speak well for the work. As a concise and handy mentor in the daily practice the cyclopaedia will amply serve its object and afford the requisite information in all matters pertaining to the practice of pharmacy including analytical examinations, methods and apparatus, toxicological emergencies, the mineral springs, and brief definitions of commonly occuring chemical, medical and therapeutical expressions.

A more detailed reference to the text of the work will be rendered when its publication has further advanced.

In consideration of its low price the "Pharmaceutisches Lexicon" is an acceptable and useful addition to the encyclopaedical literature of pharmacy, as well as to the library of the pharmacist, physician and the chemical and pharmaceutical manufacturer. *Fr. H.*

A Text-book of Pharmacology and Therapeutics or the Action of Drugs in Health and Disease. By Dr. Arthur R. Cushny, Professor of Materia Medica and Therapeutics in the University of Michigan, etc. Illustrated with forty-seven engravings. pp. 730. Lea Brothers & Co., Philadelphia. 1899.

The study of the action of drugs may be undertaken from either of two standpoints: that of the practical, in which their value in restoring health is alone concerned; and that of the scientific, in which primarily truth in its completeness is sought without directly seeking practical results. Accordingly, text-books dealing with the action of drugs may discuss them in two quite different ways. The work before us, while not in the slightest degree neglecting the practical side of the subject, emphasizes throughout its scientific aspect.

The author, at one time assistant to the well-known teacher, Prof. Oswald Schmiedeberg of Strassburg, has fortunately been considerably influenced by that eminent authority and has followed to a degree the *Grundriss* of Schmiedeberg. The use of this classical work as a model has not, however, been one of too close imitation, for the author has shown no lack of original resources. Indeed, the writer has rarely seen a work in which the author more clearly commands the field. This, together with a very pleasant style, makes the book very attractive—something one is seldom tempted to say of text-books dealing with this subject.

The author has, moreover, shown himself accessible to ideas from all sources and has not hesitated to make use of information coming from outside the walls of the medical clinic and lecture room. Even reference to the work of botanists dealing with the action of drugs on plants finds place. The physiological significance of the ionization of the molecule has been recognized and has received due consideration. As far as the writer has been able to learn, Schmiedeberg was the first pharmacologist to make use of the newer ideas concerning the nature of solutions in explaining their physiological action.

The great significance of osmotic processes, first recognized by

plant physiologists, here receives the consideration demanded by the newer physiology.

The classification of drugs has been a matter causing no little perplexity to the scientifically-minded student of their action. The system used by Buchheim and Schmiedeberg is here followed. This system will hardly be received with favor by those teachers who first of all demand of such a system that it should "teach well," i. e., that it should deal in precise headings and subheadings defined along hard and fast lines. To him, however, who demands of such a classification that it should represent the relationships existing among drugs considered from the standpoint of their action, this system is probably as satisfactory as any. In this connection one sentence may be cited from the discussion of the subject. "The classification of drugs according to their action on living matter is the natural one and is based on the same logical principle as the modern classification of plants in botany and of animals in zoology." The unsatisfactoriness of the therapeutic system of classification is dwelt on.

The author strongly insists on the necessity of going to the original publications of the investigators themselves and has made this a comparatively easy task by giving at the close of each chapter a list of the most important references bearing on the subjects discussed.

As a rule, drugs are considered in groups or series, and their properties brought out by comparative description; but little space is given up to the consideration of any one drug unless it be of unusual importance. Source, nature and dose frequently are summed up in a line or two. The pharmaceutical aspect is, therefore, given but minimal attention.

Enough has been said to show that we have in this book a presentation of the subject matter of pharmacology which must take a high place among works of its class. It is thoroughly abreast of the times and will, therefore, make necessary a better preliminary preparation if it is to be used most profitably, than is demanded by many text-books before the public.

The mechanical features of the book maintain the high standard one has learned to expect from the publishers here concerned.

Rodney H. True.

MATEIRA MEDICA, THERAPEUTICS, MEDICAL PHARMACY, PRESCRIPTION WRITING AND MEDICAL LATIN. A manual for students and practitioners. By Dr. William Schleiff, Instructor in Pharmacy in the University of Pennsylvania. Lea Brothers & Co., Philadelphia.

This book belongs to a series of Pocket Text-books published by this firm under the general editorship of Dr. Bern. B. Gallaudet, Although one might not think of putting a large twelve mo. volume in his pocket, as is here plainly expected, the work before us presents in a concise form a large amount of information. Space has been gained to a considerable degree by omitting all descriptive matter relating to crude drugs beyond a bare statement of source and nature. Physiological and therapeutic action are, of course, much more fully discussed. The subject matter seems to be well selected and the manner of treatment is very clear and straightforward.

The introductory chapters usual in a work of this scope find place here. Prescription writing is discussed and illustrated, followed by a brief statement of those phrases and principles of Latin grammar most made use of in prescription writing. The metric system receives mention in the chapter on weights and measures, but finds no use in the body of the book.

The discussion of the individual drugs needs little comment. An occasional error has crept into the botanical part of the work, brief though it be. For example, the author cites the garden lettuce as the source (U. S. P.) of lactucarium, instead of *Lactuca virosa*.

The system of classification of drugs followed is the conventional one seen in works of this type, and leave much to be wished when scientific considerations rather than precedent and long familiarity are given weight.

A number of convenient tables close the work. 1) A table of doses of commoner drugs; 2) Important poisons and their antidotes; 3) Incompatibilities and 4) A classification of drugs according to their action.

The book is characterized by a clear, concise rehearsel of the facts of most importance to the physician. *Rodney H. True.*

SUPPLEMENT.

Scientific Societies.

The Cincinnati Section of A. C. S. arranged the programme of its last meeting in commemoration of the recent death of Professor Bunsen. The life work of this distinguished chemist was presented in four brief addresses by as many speakers, namely in physical, inorganic, organic and technical chemistry. Personal reminiscences were given by others who had met him.

The Society of Chemical Industry was founded in 1881, for the advancement of the study and practice of Applied Chemistry; for the discussion of all matters connected with the chemical Industries, and for the diffusion of information on Applied Chemistry and Chemical Engineering among its members. It now numbers more than 3,000 members in all parts of the world.

Soon after the formation of the Society the wide distribution of members rendered it desirable to hold meetings which should be accessible to as many members as possible. Local Sections have been therefore formed in the following districts:—Liverpool, London, Manchester, New York, Newcastle-on-Tyne, Nottingham, Scottland, and Yorkshire.

The New York Section now has about 650 members, though it was organized only little more than five years ago. During the past year seven general meetings have been held at which an average of about three papers were read. Among the names of those who read papers that of Raoul Pictet attracts special attention.

The New York Section this year has the honor of having the President of the society, viz. Professor Charles F. Chandler, elected from its roll of members.

Those who desire information with regard to the Society or its journal can address the Honorary Local Secretary, Dr. H. Schweitzer, 40 Stone St., N. Y. City.

Society of German Naturalists and Physicians. A correspondent of the C. & D. writes as follows concerning the pharmaceutical section of this society.

"The section of pharmacy of the Naturforscher Versammlung, whose meeting took place last month at Munich, was reinstated in 1884 by the efforts of the younger and more ambitious element among the instructors of pharmaceutical branches in the universities, with a view to regaining for pharmacy—or, perhaps, more properly, for its academic teachers—the consideration in which the representative men of pharmacy used to be held in the palmy days of its former status and accomplishments. By persistent exertion they have thus far been fairly successful, without, however, having found any encouragement by the practitioners of pharmacy. Although Munich is par excellence a most favorable place for meetings, the number of pharmaceutical visitors to the section of pharmacy, even from Munich and its neighborhood, was comparatively small, the active participants being

almost entirely teachers in pharmaceutical branches, and chemists to manufacturers.

To outsiders, and even to the annual participants in these gatherings, the fact must become more and more patent that the drift of the art of pharmacy, and the tendency and interest prevailing among the rank and file of the apothekers, are by no means in accord with academic doctrinaires and prosperous manufacturers, and that the devotees of pharmacognosy and pharmaceutical chemistry, clinging to the so-called section of pharmacy in the German Naturforscher Versammlung, will in time have to yield to a more correct and intrinsic differentiation, as also to refrain from posing as representatives of present-day apothekers. Formerly the leaders in, and the promoters of, the art of pharmacy were mainly practical apothekers, but since the manufacturer has come forth the apotheker's laboratory-work has dwindled down to preparing a few galenicals and the occasional use of the test-tube, the burette, and the microscope. Pharmaceutical chemistry has found a much wider and more congenial application in manufacturing-establishments and in university research and analytical laboratories. The papers read in the section of pharmacy this year, and, in fact, most papers published in the Archiv der Pharmazie and other German pharmacutical journals, mostly originate in these productive quarters of application and research, and only an insignificant number in apothekers' laboratories. Nevertheless all credit is due to those who, after working their way up from the ranks of pharmacy to high positions in teaching and in chemical industry, still strive to sustain a disintegrating profession. They are performing uphill work, with a strong dose of self-sacrifice and self-glorification."

The following titles of papers read at the **Section Pharmacy of the V. d. N. u. A.** are taken from the Ph. Ztg. which also contains fuller reports of the sessions. Abstracts of some of the more practical subjects are also given in this number.

Pieverling (München): Prüfung und Werthbestimmung der Pastilli Hydrargyri oxycyanati.

Dieterich (Helfenberg): Ueber Protium und andere Elemisorten.

Thoms (Berlin): Ueber die Bestandtheile des Cascarillöles und zur Kenntniss der Undecylensäure.

Bernegau (Hannover): Ueber Kolamilch und Kolatabak.

Schaer (Strassburg): Ueber chemische und physikalische Veränderungen von Eisenoxydsalzlösungen insbesondere durch hydrolytische Dissociation.

Schaer (Strassburg): Resina Guajaci, Lignum Guajaci und Palo Balsamo.

Schaer (Strassburg): Ueber Catha edulis.

Partheil (Bonn): Ueber neue Phosphor-Antimon- und Arsenverbindungen.

Dieterich (Helfenberg): Ueber Elemi und verwandte Harze incl. Protium (Almessega) Elemi.

Heffter (Bern): Zur Kenntniss der Embeliasäure.

Weinland (München): Einwirkung von Natronlauge auf Arsenpentasulfid.

Meyer (Essen): Ueber Aluminiumcaseinat.

Tschirch (Bern): Weitere Untersuchungen über die Gruppe der Abführmittel welche Oxymethylanthrachinone enthalten.

Tschirch (Bern): Ueber das Cinnamein.

Tschirch (Bern): Untersuchungen der Resinolsäureharze.

Thoms (Berlin): Ueber die chemische Untersuchungen der Rauchprodukte des Tabaks.

Hilger (München): Ueber die elektrolytische Bestimmung von Metallen in der Nahrungsmittelanalyse.

Hilger (München): Zur quantitativen Bestimmung der Apfelsäure.

Hilger (München): Ueber Safran.

Hilger (München): Ueber Traganth.

Fossel (Graz): Thierische Volksmittel in der steierischen Volksmedicin.

Schaer (Strassburg): Ueber die instinktive Auffindung von Arzneimitteln gleicher Wirkung bei verschiedenen Naturvölkern.

PROCEEDINGS RECEIVED:—

New Jersey-Proceedings of the twenty-ninth annual meeting of the New Jersey Pharmaceutical Association held in Atlantic City, New Jersey, Wednesday and Thursday, May 24th and 25th, 1899, also the Act of incorporation, constitution and by-laws, roll of members, list of registered pharmacists, pharmacy laws of New Jersey. One volume, pp. 149.

Educational.

The following timely remarks by Prof. Beal are worth reproducing and should be read by every prospective pharmacist. The fact that Prof. Beal here speaks as Director of the Era home course of study, makes them all the more weighty and deserving of attention.

"The popular idea of the word education and its real significance are unfortunately quite separate and distinct. The common notion is that education consists of memorized information, and that the process of education consists in the collection and recollection of a greater or less store of abstract statements of fact. According to this theory, the well educated man is a sort of intellectual sausage who has been thoroughly stuffed with a well comminuted and properly seasoned mass of miscellaneous knowledge. This is the opinion the average raw student has of education, in which he is encouraged by the methods and practice of thousands of imperfectly equipped teachers in the public schools.

Never has there been a more false or pernicious idea promulgated, or one causing so great and useless waste of time and energy of the young men and women who have tried to equip themselves for life's battles by following it. A man may know a great deal, i. e. he may remember a great many different facts and still be a very stupid and unsuccessful member of the community.

If the etymology of the word education is considered, it is found to be derived from a Latin word meaning to educe—lead or draw out. Here we have the key to an understanding of a true education. It is the drawing out, development and training of the undeveloped and latent capabilities of the student. The man who best succeeds in this is the best educator, and not the man who stuffs the greatest amount of fact and theory down the throats of his pupils. This is the thought Socrates—per

haps the greatest teacher that ever lived—had in mind when he boasted that he followed his mother's calling, that of midwife, because he helped men to the bringing forth of new thoughts.

An educated man in the true sense is a man of thoroughly trained intellect, one whose mental powers have been fully and perfectly developed and so exercised during the developing process that they have acquired readiness, suppleness and strength.

Information is important, nay, indispensable, but its importance is secondary. Facts are to the scholar what tools are to the skillful carpenter, but as the latter is more important than his tools, so is trained scholarship greater than the facts with which it works.

For the untrained student, the aequisition of facts is painful and laborious. The trained scholar acquires them as naturally as he breathes and without conscious effort.

The pharmacist must recollect, for example, the strength, properties and dose of tincture of opium, and thousands of similar facts, but if he has been properly trained their acquisition will not be difficult nor their retention burdensome.

How may such an education be obtained? First and foremost, it must be worked for. It cannot be delivered to the student like a suit of clothes, ready made. It must be acquired by the unremitting, arduous efforts of the student himself.

The "jay" who buys gold bricks and green goods is laughed at as a simpleton for supposing it to be possible to obtain something valuable for nothing, but the man who is caught by a gold brick swindle is a veritable Solomon compared with the man who expects to obtain an education by purchase.

Property may be bought, stolen or acquired by inheritance, but an education must be worked for. The man who professes to supply it in any other manner is a swindler, and the man who expects to obtain it in any other way is an unmitigated fool."

Commercial.

REPORTS RECEIVED:—

Caesar & Loretz—Halle a. S. Geschäfts-Bericht. September, 1899. Pamphlet, pp. 78.

Heinrich Haensel—Pirna a. Elbe. Extract from Quarterly Report on Essential Oils. July, 1899. Pamphlet, pp. 24.
Bericht über das zweite Vierteljahr. 1899. Pamphlet, pp. 31.

Parke, Davis & Co.—Detroit. Physicians' Pocket Manual. 1899–1900. One vol., pp. 384.

Schimmel & Co.—Leipzig. Bericht. October, 1899. Brochure, pp. 79.

PRICE-LISTS RECEIVED:—

Caesar & Loretz—Halle a. S. Preis-Verzeichniss. September, 1899.

Druggists Circular—New York. Price List. September, 1899.

Fritzsche Bros.—New York. Wholesale price list. September, 1899.

E. Sachsse & Co.—Leipzig. Wholesale price list. September, 1899.
Vorzugs-Preisliste. September, 1899.

Whitall, Tatum & Co.—Boston. Supplemental price list. 1899.

Pharmaceutical Review.

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Editorial.

Recent numbers of the German pharmaceutical papers contain accounts of the proposed reforms in the education and training of the German apothecary. We are accustomed to consider Germany as a conservative country though its progress in many directions has been phenomenal during the present century and especially since the reestablishment of the German Empire. The system of concessions still in vogue in Germany constantly reminds us of this great conservatism of German pharmacy, though its scientific representatives at the Universities are in the first ranks of pharmaceutical scientists of the world. Bearing in mind this conservative spirit, we need not be surprised that the reforms that are about to be made are by no means revolutionary or radical. Nevertheless, these changes are in the same direction with those that some of us in this country are working for, and are, therefore, of special interest.

A considerable number of German apothecaries have been desirous of elevating their calling sociably as well as intellectually by demanding the "Abiturientenprüfung," which is the general educational test for the learned professions, as the fundamental test for admission to their calling. These will, no doubt, be disappointed. The three partial concessions to modern educational demands made are:

First. Some addition to the preliminary general education, making "Prima Reife" the requisite for registration as apprentice.

Second. The prospective pharmacist is to attend the university after the fourth year of shop-experience and not after the sixth year as heretofore, though the time he must spend in the "Apotheke" previous to taking the final examination has not been abridged. By

this arrangement he gets his scientific university training before h has had all of his drug store experience.

Third. The university course is to be lengthened by one semester so as to enable the student to take courses in bacteriology, the chemistry of food stuffs and beverages, etc.

Another point that is brought out in the discussion is that the training of the German pharmacy can no longer be regarded as a sufficient schooling even for apprentices. Special schools under the direction of competent apothecaries are called for and a corresponding abridgement of the time of apprenticeship is suggested. As stated above, these changes are very conservative, but they are in the direction of modern improvements, the necessity of which is becoming more and more universally apparent.

From time to time the results of analyses of commercial articles are published and they only too frequently show that not only drugs and preparations of an inferior grade, but willfully adulterated articles as well are sold and, no doubt, dispensed to the sick at critical moments. These spasmodic efforts, however, have so often been met by the general and sweeping statement that but very little adulteration is now practiced, that most pharmacists give little or no thought to the purity of the drugs and preparations which they purchase and dispense. Many, undoubtedly, make it a point to deal with reliable jobbers and manufacturers. But may not the jobber and the manufacturer ofttimes be as credulous as the retailer? If so, who looks after the interests of the suffering patient?

That manufacturers and jobbers are not always honest possibly no one doubts. It may do no harm, therefore, and will possibly do some good to call attention, in this connection, to the minority report of the Committee on Adulteration of the National Wholesale Druggists' Association, which appeared in full in a recent number of the Era. A large drug miller who received an order for pure powdered elm bark is said to have made the following reply to his customer

"By reference to your order we note that you say 'pure' ground elm bark. It is quite uncommon to sell this article strictly pure, as it proves unsatisfactory in almost every case to the consumer, and for years we have made a grade which contains 25 percent of wheat flour, which grade we quoted you at —— per pound. It is so seldom that we sell strictly pure, that we do not quote it unless inquired for."

It may be said that this drug miller is a comparatively honest man as evidenced by his letter. Yet may we not ask whether it is honest to sell elm bark mixed with 25 p. c. of flour without labeling each package as to the flour content? People may buy and sell oleomargerine as such, but not under the name of butter. Why then is it honest to sell wheat flour as powdered elm bark?

The following statements are said to relate other actual occurrences:

"A member (the buyer) of a certain wholesale drug company, not very long ago, approached a chemical manufacturing firm with quite a long list of staple chemicals, such as calomel, iodoform, potassium iodide, etc., with the proposition to reduce the cost of these articles to him 25 to 33 percent by adding adulterants."

Here is still another:

"In response to a complaint that an article furnished was not up to the requirements of the U. S. Pharmacopœia, a large chemical manufacturing house replied as follows: 'The only difficulty in regard to —— as well as other articles is that jobbers want to buy these goods for less money than strictly U. S. P. goods can be produced for.'"

The gravity of the situation becomes more apparent if we stop to consider that possibly every manufacturer or wholesale druggist who is guilty of such practice distributes his goods to several hundred, possibly to several thousand retail druggists who purchase on good faith, but do not test the goods.

This grave problem has not only an ethical aspect, which is too one-sided to require discussion, but a commercial bearing as well. This is the question of dishonest competition. How can the honest drug miller make a living if he is compelled to compete with one who adds twenty-five percent of adulterant to his goods; or how can the honest wholesaler hope to sell his drugs and chemicals if the unsuspecting retailer has the same articles (adulterated) offered at a much lower price? The question may well be asked why it is that those manufacturers and wholesalers who try to conduct an honest business are not up in arms against this kind of dishonest competition. There are, no doubt, many reasons for this inactivity, but it may suffice to mention only several.

One very good reason will be found in the question, why is it that the honest retailer does not expose his dishonest neighbor? Another is that more honest beginners, who possibly suffer most

from dishonest competition, have neither time nor money to expose dishonesty and fraud. A third reason, that possibly does not occur to many, though they see the working of it daily, is that the well established honest manufacturer or jobber makes use of his deserved reputation for honesty as a means of advertising. This is perfectly legitimate and constitutes the very best advertising in the long run that a firm can indulge in. It is to the disadvantage of the sick public, however, if inertia in exposing and prosecuting fraud is thus brought about. Even after the law has laid down a minimum standard for purity, there ought to be sufficient scope for excellence in other directions by which a progressive as well as honest firm might bring itself conspicuously before its patrons.

The Influence of the Presence of Pure Metals upon Plants.*

By *Edwin B. Copeland* and *Louis Kahlenberg.*

Ever since investigators began to grow plants in aqueous solutions, it has been a frequent observation that the distilled water used was in itself more or less injurious. For instance, Asehoff declares "pure" distilled water to be poisonous for *Phaseolus vulgaris;* and Frank finds the water he uses to be injurious to *Lupinus*, though not to corn and beans. These statements have called forth replies from Loew and Schulze (the latter without experimental proof), who maintained that really pure water is harmless, and that contrary appearances are due to impurities, such as salts of copper, lead, and zinc, absorbed during or after distillation.

Nägeli's careful study of the subject was edited by Cramer and published by Schwendener twelve years after the author's death. Nägeli proved conclusively that water in itself is harmless, but that various metals in solution in infinitesimal quantities are deadly. The presence of "insoluble" substances, such as carbon and platinum, is without effect. The most destructive of all the metals that he tried was copper, one part of which in a thousand million parts of water was ultimately fatal to *Spirogyra*. This dilution was so much greater

* This article, furnished to the Pharmaceutical Review by Dr. Kahlenberg at the editor's request, is an extract from the original paper which is published in full in the Transactions of the Wisconsin Academy of Sciences, Arts and Letters, Vol. XXII. pp. 454—474. All the salient points of the original, of interest to the pharmacist, are here given without the experimental details and the elaborate list of references

than that of ordinary toxic solutions as to convince Nägeli that the injury done the plant was of a different nature from ordinary poisoning, and he proposed for the new phenomena the name of "Oligodynamic effects." His idea seemed to be, that from metallic copper minutest particles pass into solution, and that these particles kill the plants by a different action from that of toxic copper salts—perhaps by physical rather than chemical means.* The phenomena of death of *Spirogyra* by oligodynamic action are, as should be expected, different from those when death is caused by much more concentrated copper, introduced as a salt.

The facts in Nägeli's paper are final. But his theoretical explanation appears to us improbable and unnecessary, and this paper is a partial explanation of our disbelief.

Every metal in contact with water and air is subject to some change. It reacts with the oxygen and carbonic acid dissolved in the water, or with the water itself, to form oxides, hydroxides, carbonates, basic carbonates, or acids, which in greater or less degree pass into solution. When this chemical action is sufficient for the effect to become visible, the metal is tarnished or corroded; and even gold and platinum lose their lustre. From common observation and scientific research it is known that many of the salts which form under such conditions are poisonous. Now, since the conditions are present under which salts form, and since the salts are known to be toxic, and since any kind of solutions of metals in the metallic state is unknown to the chemist, it is *à priori* reasonable to suppose that the injury which a plant suffers in water in the presence of a metal is due to the salts of the metal, just as much as if the salts, and not the metal, were introduced directly into the water.

The injury to the plant will depend largely upon two factors:

1. The tendency of the metal to get into solution as a component of chemical compounds—which we shall designate loosely as salts.

2. The specific toxicity of the metal when in solution in form of such salts.

There is another possible factor—the nature of the combination formed. But it is not probable that this has made any difference in

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* This seems to us to be a fair statement of the tenor of Nägeli's work, and is the conclusion commonly drawn from him. Cf. Frank and Krüger, though Nägeli does express the belief that the metals dissolve as hydroxides, or carbonates. The presence at some time of the metal itself is repeatedly emphasized as necessary to produce oligodynamic effects.

any of our experiments, except in the case of magnesium, which decomposes water and makes a solution so alkaline that the concentration of OH ions must be fatal. The rapidity of diffusion of the solution is still another factor when the plants and the metals are separated in the water, and the solution is not disturbed.

Seedlings of *Zea mais*, *Lupinus albus*, *Avena sativa* and *Soja hispida* were grown in distilled water in presence of the following substances: Au, Pt, Pd, Ag, Al, Cu, Ni, Co, Sn, Fe, Cd, Tl, Pb, Zn, Mg, Sb, Bi, S, C, Hg, As, I, Ru, Mn, Cr, In, W, Te, Se, B, Rh.

The experiments were performed in uniform glass beakers of 200 cc. capacity, which were coated with paraffine to remove even the suspicion that the glass had influenced the results. As many of the metals as were available in the form of foil, or as could be rolled, were used in that form; and pieces were cut out for use 57 by 34 mm., exposing an area of 3,876 sq. mm. These pieces were bent so as to stand on edge on the bottom of the beaker. Zinc wire was rolled flat and bent into a coil having the same area as the other metals, and reaching about the same height from the bottom of the beaker. A magnesium coil was used in the same way. Antimony and bismuth were used as sticks, of which enough were used to have the desired area; and these were tied so as to stand about as high as the other metals in the water. All of these metals then offered equal surfaces to the action of the water at practically the same distance from the roots. Roll sulphur and carbon (in the form of a plate cut from conducting carbon such as is used in batteries), though not metals, were experimented with under the same conditions. Mercury could not be employed except as a layer on the bottom of the beaker, whose surface exposed to the water was about 2000 sq. mm. Arsenic and iodine were used as a coat of flakes over the bottom of the beaker, but the surface actually exposed to the water was of course much greater than the area of glass that was covered. The last nine elements mentioned were available only as samples, of various size, and were put into smaller beakers, each receiving only one plant.

The metals we used were all of them of the best C. P. varieties of standard makes. Any impurity would not only invalidate the results directly, but might also create a miniature battery, which, even if the current itself did not influence the plants, would certainly, by so-called local action, hasten the corrosion of the metals. Before using, the metals were scoured with emery cloth or sea sand and

washed clean, and then introduced into the beakers without being touched with the hands.

The water used was distilled from tap water, and may have contained carbonic acid and a trace of ammonia. The entire distilling apparatus was of glass, and the water obtained the first few hours was thrown away, as likely to contain the most of whatever could be dissolved from the glass.

The seedlings used were average plants, selected in every case from a large number; and they were generally very uniform in all respects. At the beginning of the experiment a mark was made with India ink 10 mm. from the apex of the root. The excess in length of these apical zones over the original 10 mm. was noted daily for six to ten days. The plants were kept in approximate darkness, but not in an excessively damp atmosphere.

On the fifth day the appearance of the rootlets of *Lupinus albus* that had failed to survive was as follows:

C—the dark greenish-brown of Rockwood pottery.

Ni—white.

Co—brown, reddish or bluish in spots.

Fe—not very dark brown. Stubby lateral roots appeared after the main root tip died; these, too, were short lived. The root was covered early in the experiment with a brownish coat of "iron rust."

Cd—brown; entirely collapsed above.

Tl—light brownish; flaccid.

Zn—slightly discolored; lateral roots as with Fe.

Sb—brownish-yellow.

Mg—irregular brown blotches nearly covering light colored field; flaccid.

As—slightly discolored, flaccid; immersed hypocotyl-like root.

I—tip red-brown; little discolored above, and inclined to form stunted lateral roots there. The tip became almost blue as the iodine diffused upward, and killed the rest of the root and stained it red.

W—drab, flaccid; hypocotyl brown.

Hg—one plant dead, with root white.

There were seven control plants of *Lupinus albus* grown in water only in four beakers, and but one of these showed any considerable divergence (an excess) from the average. They were the first to develop lateral roots, which depressed the growth of the tap root a little; but the platinum, carbon and gold cultures soon passed them

in this respect. A very long tap root, however, does not necessarily indicate thrifty growth and is frequently a symptom of disease. The lower part of the tap roots of the bismuth, chromium, indium, selenium, tellurium and surviving mercury plants shot out as long, branchless whips, but they were obviously abnormal and likely to result in death. The plant grown with tellurium died abruptly at the end of such a growth, and the selenium plant had probably reached its limit on the twelfth day. On the other hand, the tap root of the ruthenium plant became stunted and at the end of the experiment was being passed by two very slender lateral branches. The root of the manganese plant was stained pale yellow and cracked to let out numerous lateral roots, which grew just enough to show their tips, after the fashion of the iron plant.

As to the condition of the metals themselves at the end of the experiment, there was no visible change in the gold, platinum, palladium, silver, nickel, tin, antimony (sulphur, carbon), rhodium, chromium, indium, tellurium (selenium), and ruthenium, tungsten, and boron,—the last three being in form of powder. The aluminum was not quite as bright as at first; the copper of a little darker hue; the cobalt tarnished olive-green. The solution containing iron was brownish-yellow and contained a yellow precipitate—in part probably basic carbonate of iron—with which the metal was thickly coated. The cadmium was badly corroded, the discoloration being very likely due to basic carbonate. Thallium was also corroded, of a blurred grayish appearance; the solution acquired a very pale lavender tint, but contained no precipitate. Zinc was badly discolored, by its basic carbonate. Magnesium was much discolored; there were hydrogen bubbles on the metal and the sides of the beaker, and the alkalinity of the water was equal to 0.0075 Normal. According to Kahlenberg and True, a concentration of 0.005 N. of hydroxyl ions is about sufficient to kill in twenty-four hours. The water in which lead had been placed contained a very copious precipitate of basic carbonate of lead, which covered the bottom of the beaker and coated the metal. The change in the sticks of bismuth was slight, the lustre having acquired an olive tint. The mercury surface was somewhat tarnished. The water containing sulphur showed a trace of sulphuric acid with the barium chloride test, but the free acid was only equal to 0.15 cc. N. per liter. Iodine colored the water the characteristic shade and diffused upward slowly, staining the paraffine on the wall of the

beaker as it went. Manganese became covered with a brown precipitate—probably oxyhydrate of manganese—which was also deposited on the bottom of the beaker. After a time white flakes on the arsenic betrayed the formation of arsenous oxide.

Platinic chloride and palladium nitrate were put into the water in unmeasured traces, to see if they would act as stimulants; but no such effects resulted. One of the plants in the presence of metallic lead was too vigorous to be killed by the concentration of lead ions present during the first three days, and grew in the whip-like form observed before in some toxic but not fatal solutions. A spoonful of carbonate of lead in a beaker of water dissolved enough to be deadly during the first day. Tungsten induced a similar brief growth in length, without branches unless at the very base, as did also selenium, indium and boron; the last one (boron) produced a monstrosity.

The roots of the oat were less inclined to become discolored than those of the lupine. Roots dead under the influence of silver, thallium, zinc, lead, antimony and bismuth were white; and cobalt and cadmium only gave them a dirty appearance. Manganese colored them yellowish, and tellurium pale brown. The alkalinity caused by magnesium was equal to 4.2 cc. N. per liter; by zinc, to 0.05 cc. N. per liter. In their general and most striking features the results are like those given for *Lupinus*.

The seedlings of *Soja hispida* were not as uniform nor robust as was desirable, and the only result noted was that the same metals that killed *Lupinus* were also fatal to *Soja*. In addition to these, silver and mercury also seem to have been deadly.

The elements whose presence in the water where plants grow has been shown to be always fatal, are thallium, cadmium, copper, cobalt, zinc, lead, iron, antimony, magnesium, arsenic, iodine, tungsten and tellurium. Mercury and silver seem to kill the *Soja* bean. It is not necessary, and might not be possible, to demonstrate by chemical tests the presence of all of these substances in the roots they have killed. They had to be in the roots, where they could attack the protoplasm of each cell before they could kill it. And in some instances the dead root's appearance shows the presence of salts of the metal that killed it. Thus, roots killed by copper or nickel, or iron or cobalt show colors characteristic of salts of these metals, while those killed by zinc, lead, thallium and arsenic are at the darkest not more discolored than they would be if killed by heat. The appearance

of the root or of the metal, or of both, betrayed the presence of salts of every metal that was uniformly harmful.

What literature there is bearing upon this question harmonizes with our results as to the comparative toxicity of the different elements: and as all other determinations, while agreeing with ours, have been made with the salts of the metals, we have in them still further support for the idea, that it is in ordinary compounds, and not in any modification of the metallic form, that the metals in our experiments attack the roots. And this being so, we see absolutely no difference between this and any other ordinary case of poisoning.

On the first factor in determining the injury a metal can do—its tendency to get into solution—we introduce from a table by Neumann the following sequence of basic elements, arranged according to their solution tensions, as determined by the differences in potential existing between the metals and normal solutions of their salts: magnesium, aluminum, manganese, zinc, cadmium, thallium, iron, cobalt, nickel, lead, hydrogen, bismuth, arsenic, antimony, tin, copper, mercury, silver, palladium, platinum, gold. Down to mercury, all of these elements except aluminum and tin and possibly magnesium are injurious, and, excepting further manganese and bismuth, fatal during the time of experiment. Mercury and silver were sometimes injurious; palladium, platinum and gold apparently never so. The salts of the elements standing high in the above series which did not kill our plants are, so far as known, comparatively harmless. On the whole, this series is strikingly similar to the one we would make from the effects upon plants.

On the second factor—the toxicity of the salts of the several elements—there is considerable more or less instructive but scattered literature. On platinum and gold the only information we have found is a statement by Knop that $PtCl_4$ and $AuCl_3$ are injurious to plants, without being demonstrable in the ash; which indicates that they are extremely poisonous. The same statement is made with regard to Ag_2O. Kahlenberg and True find the salts of silver to be the deadliest they used, N/409,600 being about a sufficient concentration to kill lupines in one day. According to Paul and Kroenig, N/200 of silver salts is necessary to kill nearly all bacteria in a culture in 10 h. 30 m. The same authors find gold more toxic than copper, but do not call platinum very injurious. Kahlenberg and True state that lupines will just live in N/12,800 $HgCl_2$; but Heald places the

limit of endurance for *Pisum sativum* at N/204,800; and Paul and Kroenig for bacteria, and Stevens for fungus spores, agree that mercuric salts are among the most poisonous known. Other experiments with palladium are not known, but our own merely qualitative one showed that its salts are very poisonous. Among these first five metals of the above list, then, are those whose salts are the most deadly known; and yet, because of their resistance to corrosion, their presence in the free native state caused little or no injury.

From the appearance of the metal and from its position in Neumann's table, it is probable that considerable aluminum went into solution, and from its not hurting the plants we conclude that it is not very poisonous. This conclusion is confirmed by Molisch, who applied aluminum sulphate in considerable quantities to pots of *Hortensia* without very great injury, and found alum entirely harmless. Aluminum is nearly always present in *Lycopodium*, and is an occasional constituent of many flowering plants; according to Gaze, Al_2O_3 makes up 0.3259 percent of the dry weight of *Hydrastis* roots.

The poisonous character of salts of copper is universally recognized, and makes itself apparent whenever any salt which dissociates to form copper ions enters the plant through the leaves (when it is used as a fungicide) or from the ground. Molisch finds the sulphates of nickel, cobalt, zinc and copper to be poisonous. Tschirch holds that copper is not a poison, but that its salts are corrosive and therefore injurious; if his view is correct, it must be the salts that are effective in our experiments, but we would not like to rely upon this proof. According to Günther, copper acts upon fungi as a stimulant when very dilute; when not so dilute, as a poison. The concentration of copper salts (dissociated) necessary to kill *Lupinus* in twenty-four hours according to Kahlenberg and True, is N/25,600. On the same authority nickel salts are fatal at a concentration of N/25,600, and cobalt salts at the same point. Phillips quotes Freytag to the effect that nickel has about three-fifths of the toxic power of cobalt. Other authority makes the difference greater; thus Heald gives N/6,400 $CoSO_4$ and N/51,200 $NiSO_4$ as solutions just permitting the growth of *Zea Mais*, and Richards finds the most favorable concentration for the vegetable development of *Aspergillus niger* to be 0.002 percent $CoSO_4$ or 0.033 percent $NiSO_4$; their toxicity is probably in the same proportion, and the percent data are comparable because nickel and cobalt have about the same atomic weight.

Our results agree with those of Richards that cobalt is decidedly more poisonous than nickel.

The influence of iron upon plants depends upon whether it occurs in solution as a crystalloid or as a colloid substance. In our experiments enough iron dissolved to discolor the solution, but it was probably in large part colloidal. That it did not diffuse readily into the interior of the roots, is shown by their staying alive and attempting to form lateral branches, as was noticed again in the case of manganese. In minute quantities iron is a necessary plant food. Ferrous salts may be injurious chiefly by their reducing action. Richards finds $FeSO_4$ in appropriate dilution to act as a stimulant upon *Aspergillus*. Kahlenberg and True place the concentration at which Fe ions exert a fatal influence at less than N/51,200.

The same authors give the greatest concentration at which lupines can endure cadmium salts as N/204,800, showing that these salts are exceedingly toxic. Guenther finds cadmium more poisonous than zinc for fungi. Blake, from experiments upon animals, cites cadmium and thallium as typical elements of high atomic weight and intense physiological action. Knop finds thallium, like gold and silver, deadly without being demonstrable in the ash. Both thallium and cadmium made short work of our plants.

The literature upon zinc as a poison is very extensive, but wanting in quantitative data. Knop attempted to substitute it for calcium and found it injurious when present as a trace in the roots. Molisch and Günther agree that it is poisonous. Nobbe, Baeseler and Will find it more poisonous than lead, but less so than arsenic (as arsenite). Krauch finds it injurious in minute quantity in water cultures, but less so in the ground, which experiment would undoubtedly show to be true of other poisons. At a sufficient dilution it acts as a stimulant. The toxicity of lead is likewise generally recognized, but without there having been any quantitative determinations it is probably less intense than that of many other metals.

We know no previous work upon the effect of antimony upon plants, but its salts have a more intense action in animal physiology than do those of bismuth. Bismuthyl phosphate is not immediately fatal to corn.

While magnesium is a necessary food of all plants, it is not improbable that it may under some conditions act as a poison. In our experiments, however, the injury to the roots was more likely to be

due to the alkalinity than directly to the magnesium. The action of sulphur upon plants depends entirely upon the chemical combination in which it is present; sulphates are essential food, while sulphites and sulphides (usually, at least) are poisonous.

According to Remsen, arsenic is not poisonous in the elementary state, but becomes so when oxidized. And the violence of the toxicity depends further upon the degree of oxidation. Working with arsenites, Phillips concludes that arsenic is more toxic than copper, and Nobbe, Baeseler and Will find that it surpasses zinc. On the other hand, working with arsenates Blake finds that the toxicity depends upon the basic ion. Low states that algæ grow in 1 percent potassium arsenate, and Bouilhac goes so far as to maintain that arsenates may replace phosphates in the nutrition of various green and blue-green algæ. This is denied by Stocklasa, who places the concentration injurious to plants at N./100,000 As_2O_3 and N./1,000 As_2O_5. Knop pronounces arsenates harmless toward mature phanerogams.

Manganese is injurious in the concentration used by Molisch, but it has been detected in the ash of a great number of plants. According to Spampani, while not a substitute for iron, it will postpone chlorosis. It is difficult to draw conclusions from Stevens' work, since in one table he rates the toxicity of $KMnO_4$ above that of potassium cyanide, sulphuric acid or caustic potash, and in another declares that it is not poisonous. Stevens finds potassium chromate somewhat injurious to fungus spores, and potassium bichromate very much so. Knop agrees that chromic acid is injurious, but says that chromium oxide is without effect. The only statement with regard to tungsten is Knop's, that "Phosphorwolframsäure" is fatal without being demonstrable in the ash. Cameron regarded selenium as to some extent a substitute for sulphur; but Knop and Bokorny agree that, while telluric acid is harmless, the salts of both selenic and selenious acids are poisonous. Knop places boric acid among the poisons, and Peligot agrees with him. Paul and Kroenig do not find it extremely toxic. Traces of boron have been found in the ash of numerous plants.

It is likely that iodine alone among the substances we have tested injures plants directly, acting in the elementary state as the elementary halogens have been found before to attack plants more violently than do their acids. But iodine is so distinct from the metals in all respects that its behavior throws no doubt on our views as to the mode of their action.

With the exception, because of their extreme resistance to corrosion, of the first four or five metals in our list, we find that just those metals poison plants when present in water whose salts are already known to be toxic; which is the final evidence in favor of our original view that in our experiments—and presumably in Nägeli's too—it is still strictly the salts acting in their ordinary characteristic ways, which kill the plants.

In is a well recognized fact in animal physiology that the phenomena of stimulation and of poisoning are very intimately related, and the applicability of the same principle in plant toxicology has been constantly forced upon us. The same thing has been observed to apply to certain fungi by Raulin, Pfeffer and Richards for manganese, zinc, iron, cobalt and so on; and a statement of Risse in Sach's Experimental Plant-Physiology indicates that zinc sometimes exerts a similar influence on phanerogams. Frank and Krueger find that by proper application of copper a potato plant can be stimulated to the production of sturdier leaves and more chlorophyll, and to more active transpiration and assimilation, and longer life. In our own experiments we have seen copper and cobalt certainly, and boron, lead and tungsten probably, exert a stimulating influence in individual instances. And we have found that, except when the control plants were selected as especially thrifty, those that grew in the presence of gold and platinum, which can have entered into solution only in the most infinitisimal amounts, were uniformly of more vigorous growth. The subject of chemical stimulants is a most inviting one for further study.

University of Wisconsin, Madison, Wis.

Modified Assay Process for Fluid Extracts.

By *A. B. Lyons.*

Every one who has had any practical experience in the assay of fluid extracts knows how difficult it is, sometimes, to extract the alkaloid completely by the "shaking out" process. The solution we have to operate upon is so loaded with inert matter that it is liable to become only semi-fluid under the influence of the ethereal solvent,

which abstracts from it both water and alcohol, and we have often to contend with an obstinate determination to emulsionize.

In most cases we may accomplish our desired purpose by adding to the fluid extract in the first instance a certain quantity of dilute alcohol, and repeating such addition whenever in the course of the operation the fluid becomes inconveniently thick. It is understood, of course, that the alkaloid separated in this way, necessarily accompanied with foreign substances, is to be extracted from the ethereal solvent with acidulated water, from which in turn it is to be finally taken out in a relatively pure state by a second shaking out with ether.

For the assay of fluid extract of cinchona bark, and similar preparations containing much tannin, the following procedure will be found more advantageous and equally efficient. Put into a 50 cc. measuring flask about 40 cc. of strong alcohol, add from a measuring pipette exactly 2 cc. of the fluid extract, shaking the flask as the fluid is delivered. Possibly it may be advantageous to add to the alcohol first a few drops of acetic acid (40 p. c.), but with preparations of cinchona, at least, I have not found this necessary. Add next 2 cc. of an alcoholic solution (12 p. c.) of ferric chloride, mix well, make up the volume of the solution with alcohol to about 47 cc., add 2 cc. of solution of ammonia (10 p. c.), shake well, test the mixture for free ammonia by introducing into the neck of the flask a strip of moistened red litmus paper, not allowing this to come in contact with the glass. If necessary add more ammonia until, after thorough shaking, an excess is found to be present.

Now fill the flask exactly to the mark with strong alcohol, shake vigorously and let stand one hour. Then pour the mixture on a filter, collect of the clear and nearly colorless filtrate exactly 25 cc., corresponding with 1 cc. of the fluid extract, evaporate on a water bath to a small volume, then add 5 cc. of water, and hydrochloric acid (10 p. c.) in distinct excess. Place again on the water bath until alcohol is nearly all driven off, transfer the solution to a suitable vial, rinsing the capsule with several small portions (1 cc.) of water containing hydrochloric acid.

Shake the acid solution with several successive portions, 10 or 15 cc., of ether to remove fatty and waxy matter. Finally render alkaline with ammonia and shake out with ether in the usual way.

In the case of fluid extracts of cinchona, the results are most

satisfactory. The whole of the alkaloid is obtained with a minimum expenditure of ethereal solvent, and as nearly pure as the requirements of such an assay demand. Of course, solid extracts, after dissolving in dilute alcohol in the usual manner, may be treated in the same way.

An alternative procedure substitutes for the ferric chloride a solution of lead subacetate. Put into the measuring flask alcohol 46 cc., fluid extract of cinchona 2 cc., solution lead subacetate 2 cc., filling the flask thus exactly to the mark. Shake well together, filter, add to the filtrate some dry sodium carbonate to remove the excess of lead, shake well and filter once more. Use 25 cc. of the final filtrate for the assay, proceeding exactly as described above.

In applying these methods to other fluid extracts, the peculiarities of the several alkaloids present must be taken into consideration. In the case of alkaloids such as atropine, we must remember the danger of destruction of the alkaloid by rash heating in contact with active chemical agents. The quantity of fluid extract to be used for the assay must be such as to furnish from 0.015 to 0.050 gm. of alkaloid.

In any case the alkaloid separated by the above methods may be determined by the improved alkalimetric process recently published by Dr. Gordin.*

Laboratory Nelson, Baker & Co., Nov. 16, 1899.

Arrangement and Fitting of Drug Stores.†

A draft for the equipment of a pharmacy in accordance with the style of the Renaissance is reproduced in Fig. 3. The quadratic ground plan of the Gothic equipment has been retained; the entrance to the laboratory, however, is in the rear, opposite the main entrance to the store. A third door to the right, as indicated in the ground-plan, enters into a side-room.

The counters and prescription desks are arranged like those in the Gothic plan. In order to bring about a more pleasing effect, it is suggested that different kinds of wood in their natural finish be

* Pharm. Archives, 2. p. 313.

† Continued from p. 514.

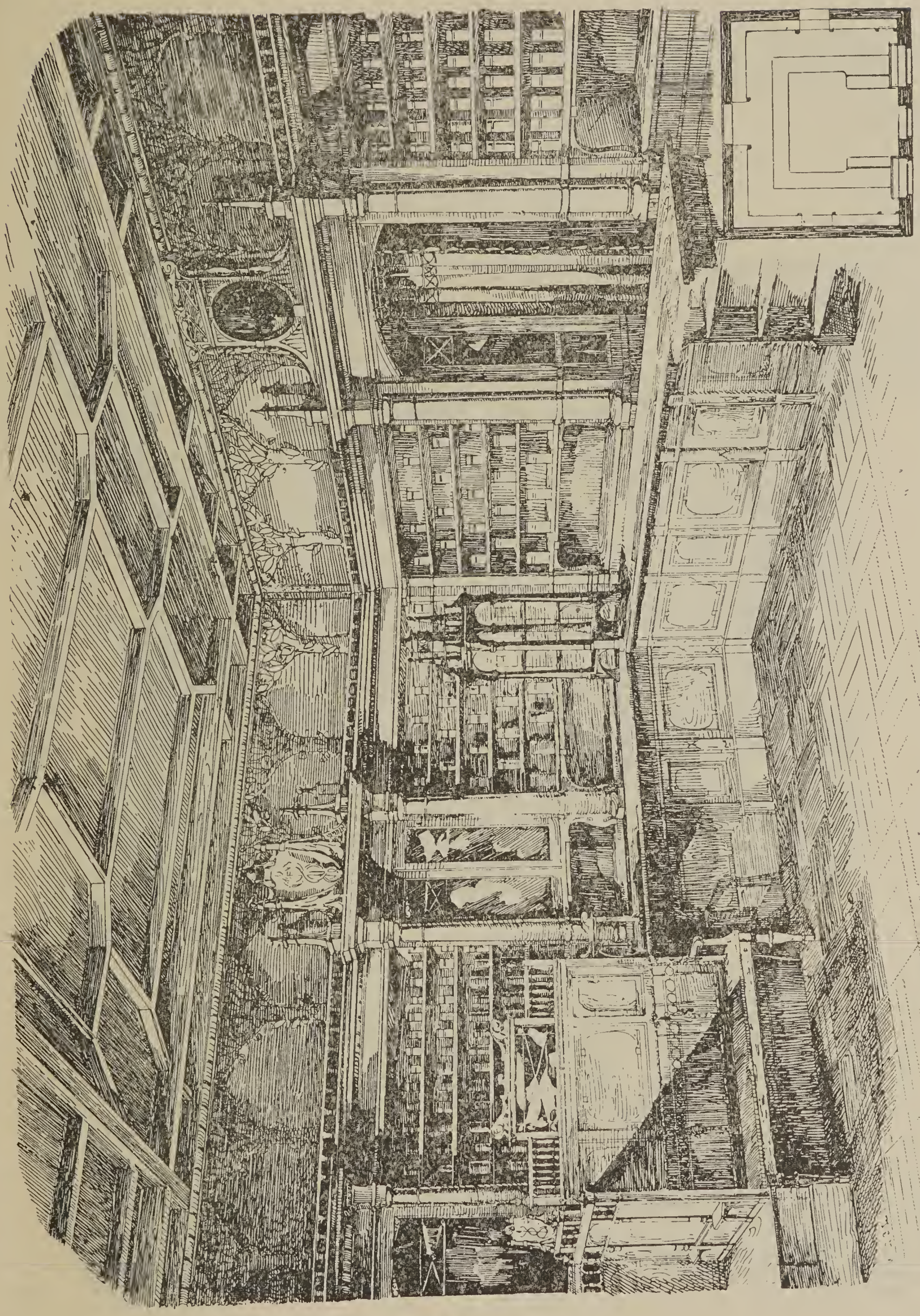

Fig. 3. Equipment of a pharmacy in accordance with the Renaissance style.
Designed by the "Hof-Moebelfabrik" of Franz Schneider in Leipzig.

used. As a good combination, oak, walnut and maple are mentioned. The first is to be used principally for frame-work, the walnut for the columns, and the maple, on account of its handsome grain and lighter color, for the panels.

The slight projection of the prescription counters with the benches projecting still farther into the store, the arrangement of the show-windows, the cabinets at the angles of the main counter and side

Fig. 4. Apothecary shop in Klattau.
From Peters "Aus pharmaceutischer Vorzeit."

counters, the arrangement of the shelving, the style of ornamentation, etc., all become readily apparent from the sketch. The spaces in the frieze can be filled in with paintings or appropriate mottos and sentiments. The floor is of oak.

While the Renaissance became more and more predominant in the course of time, it itself underwent a number of modifications. The original simplicity of the Renaissance gave way to all kinds of out-growths, thus giving rise to a style which is sometimes called the

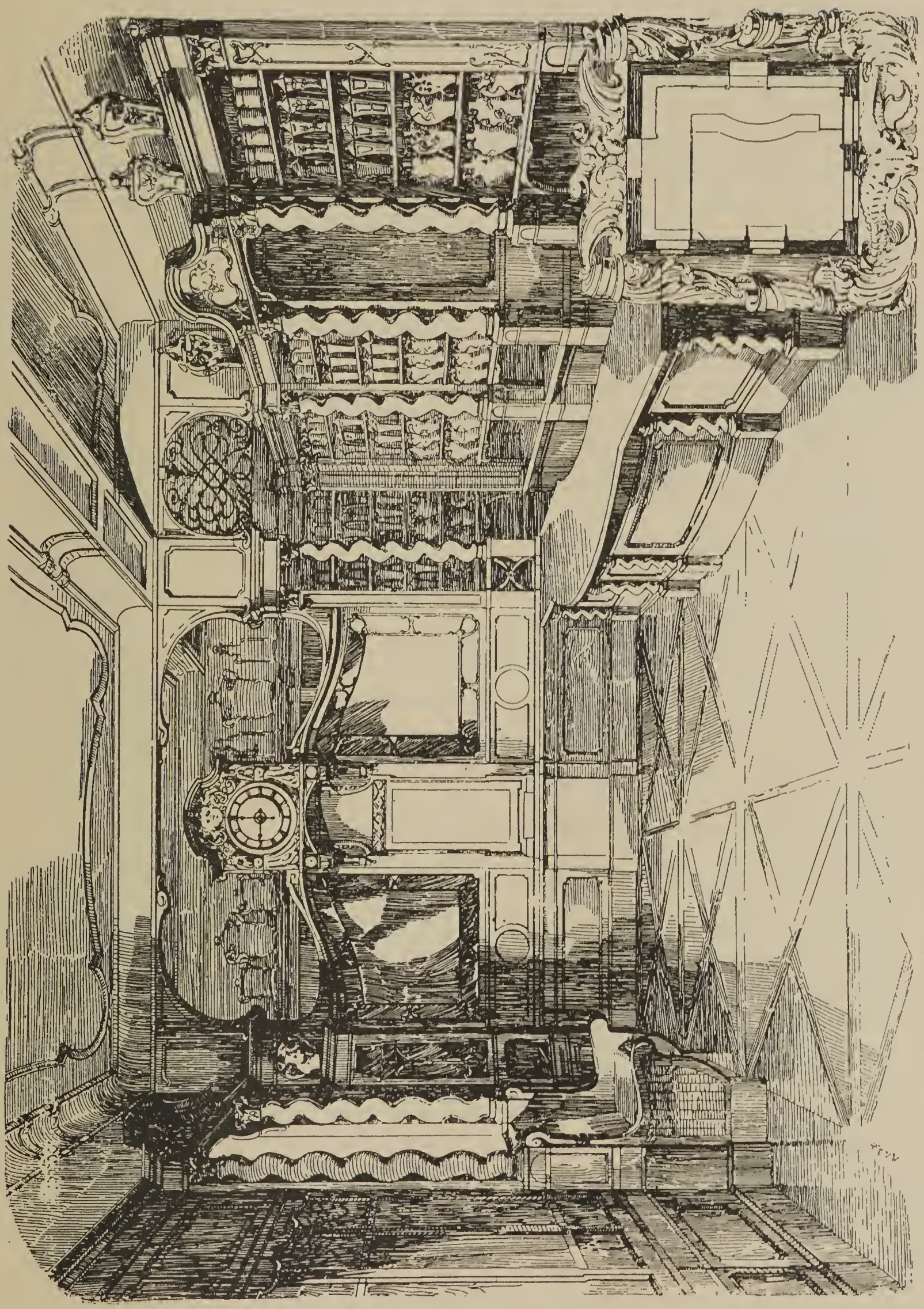

Fig. 5. Equipment of a pharmacy in accordance with the Baroque style.
Designed by the "Hof-Moebelfabrik" of Franz Schneider in Leipzig.

Baroque (in bad taste, grotesque, odd), which prevailed from the middle of the seventeenth century for almost a hundred years. This style affected principally the interior arrangement of dwellings and public buildings, for example the apothecary shops. That the interior of the latter was subject quite generally to the rules of the Baroque style becomes apparent not only from numerous illustrations which have been preserved, but from furniture and equipments which have come down to us from that period. Such relics are to be found in the National Museum at Nürnberg. Indeed, a complete equipment has been preserved in the apothecary shop in Klattau. (Fig. 4.) This apothecary shop was planned by the Jesuits in 1733 and although in private possession since 1810 few or no changes seem to have been made. The plans were evidently made in accordance with the same style in which their churches were built.

How these old drawings and equipments may serve as models for the modern drug store is shown Fig. 5. As the ground plan indicates, the arrangement is not square as is the case in the Gothic and Renaissance plans, but oblong. The entrance to the drug store is indicated by the left front opening of the ground plan, the two other doors are indicated one to the right, the other to the rear. The position of the windows is also apparent.

According to the original plans of the designer, the counter to the right is to be used as a prescription counter. The American druggist would undoubtedly prefer the space to the rear of the partition for this purpose, the front view of which very much resembles that of the average American prescription counter. The curved lines of the counter and columns as well as the elaborate ornamentation the window seat need but be alluded to. The ceiling, divided into several fields, is made of stucco. Those portions of the wall not covered with shelving are paneled wainscoting of the same height with the shelving. As to material, natural walnut may be used with some gilt by way of decoration. A more striking impression can be produced by using pine, the main portions or back ground being painted sea-green, the columns, arches, mouldings and cornices painted white. The capitals and the ornaments in the curved gables are to be gilt. Thus a vivid contrast to the soberness of the Gothic and Renaissance styles is produced.

Kneipp Remedies.

Arranged by *R. H. Denniston.*

The firm of Caesar & Loretz, Halle, Germany, has recently brought out a list of the vegetable drugs used by Rev. Father Kneipp in his practice.

It will be remembered that this eminent practitioner was a strong believer in pure water as a cure for disease. At Wörishofen, where he lived and died, it was a not unusual thing to see groups of people tramping through the dew-covered grass at break of day, the patients, high and low, including persons with consumption, spinal complaint and other organic diseases.

The list which follows has been arranged for the convenience of pharmacists. The remedies are primarily classified morphologically; the common names, by which the drugs are ordinarily called for follow in alphabetical order, each with its Latin equivalent. Inasmuch as "Pfarrer Kneipp, as he is known among the German speaking peoples, has many followers in this country, the following list may prove serviceable to American pharmacists who have among their German customers believers in the Kneipp school of therapeutics.

Cortices—Barks.

Eichenrinde—*Cortex frangulae.*
Faulbaumrinde—*Cortex quercus.*

Flores—Flowers.

Bergwohlverleih—*Flores arnicae.*
Dornschleh-Blüthen—*Flores acaciae.*
Gänseblümchen—*Flores bellidis.*
Hollunderblüthen—*Flores sambuci.*
Huflattichblüthen—*Flores farfarae.*
Kamillen—*Flores chamomillæ vulgar.*
Kastanienblüthen—*Flores hippocastani.*
Lindenblüthen—*Flores tiliae.*
Malve—*Flores malvae arborae.*
Ringelblumen—*Flores calendulae.*
Schafgarbenblüthen—*Flores millefolii.*
Schlüsselblumen—*Flores primulae.*
Stockrose—*Flores malvae arborae.*
Taubnesselblüthen—*Flores lamii.*
Wollkrautblüthen—*Flores verbasci.*

Foliæ—Leaves.

Attichblätter—*Folia ebuli.*
Bärentraube—*Folia uvae ursi.*
Birkenblätter—*Folia betulae.*
Bitterklee—*Folia trifolii.*
Brombeerblätter—*Fol. rubi fructicosi.*
Eibischblätter—*Folia althaea.*
Garten-Salbei—*Folia salviae.*
Hollunderblätter—*Fol. sambuci nigri.*
Huflattich—*Folia farfarae.*
Johannisbeerblätter, schwarze—*Folia ribis nigri.*
Melissenblätter—*Folia melissae.*
Nussblätter—*Folia juglandis.*
Pfefferminze—*Folia mentha piperitae.*
Rosmarin—*Folia rosmarini.*
Sumpfklee—*Folia trifolii.*
Wasserminze—*Fol. mentha aquaticæ.*

Fructi—Fruits.

Anis—*Fructus anisi vulgar.*
Berberitzenbeeren—*Fruct. berberidis.*

Bohnenschalen—*Fructus Bohnenschalen.*
Fenchel—*Fructus foeniculi.*
Hagenbutten—*Fructus cynosbati.*
Heidelbeeren—*Fructus myrtilli.*
Kastanienpulver (Schnupfmittel)—*Fructus hippocastani tosti.*
Kreuzdornbeeren—*Fructus rhamnus cathartici maturi.*
Kümmel—*Fructus carvi.*
Wachholderbeeren—*Fructus juniperi.*

Herbæ—Herbs.

Angelicablätter—*Herba angelicae.*
Anserine—*Herba anserinae.*
Augentrost—*Herba euphrasiae.*
Basilicumkraut—*Herba basilici.*
Brennnesselkraut—*Herba urticae.*
Brunnenkresse—*Herba nasturtii.*
Ehrenpreis—*Herba veronicae.*
Eisenkraut—*Herba verbenae.*
Erdbeerblätter—*Herba fragariae.*
Gänseblümchenkraut—*Herba bellidis perennis.*
Gänsefingerkraut—*Herba anserinae.*
Gartenraute—*Herba rutae hortensis.*
Gauchheil—*Herba anagallidis.*
Ginsterkraut—*Herba genistae tinctoriae.*
Gundelrebe—*Herba hederae terrestris.*
Haidekraut—*Herba ericae.*
Heidelbeerblätter—*Herba myrtilli.*
Heildolde—*Herba saniculae.*
Hirtentäschelkraut—*Herba bursae pastoris.*
Hühnerdarm—*Herba stellariæ mediæ.*
" rothe—*Herba anagallidis.*
Johanniskraut—*Herba hyperici.*
Kardobenediktenkraut—*Herba cardui benedicti.*
Klettenkraut—*Herba bardanae.*
Löffelkraut—*Herba cochleariae.*
Lungenkraut—*Herba pulmonariae maculatae.*
Mausöhrchen—*Herba auriculae muris.*
Pestwurzblätter—*Herba petasitidis.*
Quendelkraut—*Herba serpylli.*
Ringelblumenblätter—*Herba calendulae.*
Sanikel (Heildolde)—*Herba saniculae.*
Schafgarbe—*Herba millefolii.*
Schlüsselblumenkraut—*Herba primulae.*
Spitzwegerich—*Herba plantaginis lanceolata.*
Stiefmütterchenthee—*Herba violae tricoloris.*
Tausendgüldenkraut—*Herba centaurii minor.*
Veilchenblätter—*Herba violae odoratae.*
Vogelknöterich—*Herba polygoni persicariae.*
Waldmeister—*Herba asperulae.*
Wegerich—*Herba plantaginis major.*
Wegtritt—*Herba polygoni avicular.*
Wegwartkraut—*Herba cichorii.*
Weinraute—*Herba rutae hortensis.*
Wermuth—*Herba absynthii vulgaris.*
Wiesen-Sauerampfer—*Herba rumicis acetosae.*
Wollkraut—*Herba verbasci.*
Zinnkraut od. kl. Schachtelhalm—*Herba equiseti arvensis.*
Zinnkraut od. gr. Schachtelhalm—*Herba equiseti majoris.*

Ligna—Woods.

Sandel—*Lignum santalinum rubrum.*
Sassafras—*Lignum sassafras.*

Radices—Roots.

Altheewurzel—*Radix althaeae.*
Attich-Wurzel—*Radix ebuli.*
Alantwurzel—*Radix helenii cruda.*
Baldrian—*Radix valerianæ hercynica.*
Brennnesselwurzel—*Radix urticae.*
Ebenwurzel—*Radix carlinae.*
Engelwurzel—*Radix angelicae.*
Enzianwurzel—*Radix gentianae.*
Hazelwurz—*Radix asari.*
Hollunderwurzel—*Rad. sambuci nigri.*
Klettenwurzel—*Radix bardanae.*
Nelkenwurz—*Radix caryophyllatae.*
Petersilienwurzel—*Radix petroselini.*

Pimpinellwurzel—*Radix pimpinellae saxifraga.*
Rhabarberwurzel—*Radix rhei sinensis 'shensi.*
Sarsaparillwurzel—*Rad. sarsaparillae Honduras.*
Schlüsselblumenwurzel—*Radix primulae.*
Veilchenwurzel—*Rad. violæ odoratæ.*
Wallwurz—*Radix consolidae.*
Wegwartwurzel—*Radix cichorii.*
Zwergholunderwurzel—*Radix ebuli.*

***Rhizomæ*—Rhizomes.**

Kalmuswurzel—*Rhizoma calami.*
Tormentillwurzel—*Rhizoma tormentillae.*

***Semenes*—Seeds.**

Angelicasamen—*Semen angelicae.*
Bockshornklee—*Semen foenugraeci.*
Hagebuttenkerne—*Semen cynosbati.*
Kürbiskerne—*Semen cucurbitae.*
Leinsamen—*Semen lini.*
Senfkörner, gelbe—*Semen erucae.*
" schwarze—*Semen sinapis Hollandic.*

Miscellaneous.

Aloe—*Aloe capensis.*
Hafer, geschälter—*Avena.*
Harzkörner—*Olibanum.*
Mistel—*Viscum guercinum viride.*
Tannenspitzen—*Turiones pini.*

Popular German Names of Domestic Drugs and Medicines.*

By *Fr. Hoffmann.*

Kinderwindpulver — *Pulv. magnesiae*
Kirchenrauch—*Olibanum.* [*c. rheo.*
Kirschenstengel—*Stipit. cerasorum.*
Kirschlorbeerwasser, Kirschwasser } *Aq. cerasorum, (Aq. amygdal. amar. dil.)*
Kissekenblumen—*Flor. sambuci.*
Kitschelklee, Kitschelthee } *Herb. trifolii arvcnsis.*
Klander—*Fruct. coriandri.*
Klapprosen—*Flor. rhoeados.*
Klarkalk—*Calc. chlorinata.*
Klatschmohn, Klatchrosen } *Flor. rhoeados.*
Klatschrosensaft—*Syr. rhoeados.*
Klauenfett—*Ol. ped. taurin.*
Klebpflaster—*Empl. adhaesivum.*
Kleeblumen—*Flor. lamii alb.*
Kleesalz—*Oxalium* (*Acid. oxalic.*) (!)
Klettendistelwurzel, Klettenwurzel } *Rad. bardanae.*
Klettenöl, Klettenwurzelöl } *Olcum capill. rubr.*
Klewerweiss—*Flor. trifolii alb.*
Klieberwurzel, Kliemmwurzel } *Rad. bardanae.*
Klitschen—*Flor. rhocados.*
Klitschpulver—*Talcum pulv.*
Klitzenstein—*Zinc. sulfuric.!*
Klopfpulver—*Lycopodium.*
Klosteressenz—*Tinct. amara.*
Knicholzöl—*Ol. pumilionis, Ol. tcre-*
Knickbeeren—*Fruct. juniperi.* [*bint.*
Knoblauch—*Bulbus allii.*
Knoblauchöl—(*Tinct. asae foet.*)
Knochenasche — *Cornu cervi ust. praep.*
Knochenfett—(*Ol. adipis.*), *Paraff liquid.*
Knochenkohle—*Ebur ustum.*
Knochenöl—(*Ol. adipis.*), *Paraff. liquid.*
Knochenschwarz—*Ebur ustum.*
Knörrkrautblüthe—*Flor. sambuci.*
Knopfrosen—*Flor. rosar.*
Knorpelpflaster—*Empl. oxycroc.*
Knorpelsalbe—*Ungt. rosmar. comp.*

* Continued from p. 460.

Knorpeltang—*Caragaheen.*
Knospenöl—*Ol. lauri.*
Kölnischwasser—*Spirit. odoratus.*
Kömel—*Fruct. carvi.*
Königskerzen—*Flor. verbasci.*
Königskerzenkraut—*Fol. verbasci.*
Königskerzensalbe—*Ungt. flavum.*
Königspflaster—*Empl. fuscum.*
Königspillen—*Pil. laxantes.*
Königsräucherpulver—*Pulv. fumalis*
Königsrinde—*Cort. chinac.* [*reg.*
Königsrosen—*Flor. paeoniae.*
Königssalbe—*Ungt. basilicum.*
Königstropfen—*Elix. e succo liquirit.*
Königswasser—*Acid. nitric. 1 et Acid. muriat. 2.* (!)
Königswurzel (gegen Zahnschmerzen)—*Rad. pyrethri.*
Körbelkraut—*Herb. cerefolii.*
Körbelsalbe—*Ungt. majorani.*
Körnlesthee—*Sem. cynosbati.*
Kohlensaures Pulver—*Natr. bicarbon*
Kolfonium—*Colophonium.*
Kolikthee—*Herb. menthae pip.*
Koliktropfen—*Tinct. carminat, Tinct.*
Kolofon—*Colophonium.* [*cinnam.*
Kolonder, alte—*Spir. odoratus.*
Komödiantenpflaster—*Empl. plumbi comp.*
Kommandanttropfen } *Tinct. benz.*
Kommandörbalsam } *comp.*
Kopahubalsam—*Bals. copaivae.*
Kopekenpulver—*Pulv. cubebar.*
Kopfflusspflaster—*Empl. canth. perp.*
Kopfsalbe—*Ungt. hydrarg. cin. dilut.*
Kopperwasser—*Ferr. sulfuricum.*
Korallenpulver, weiss—*Conchae praep.*
Korallenthee—*Caragaheen.*
Korallenwurzel—*Rad. polypodii.*
Korallisches Pulver—*Pulv. liquir. comp.*
Koriander—*Fruct. coriandri.*
" schwarz—*Sem. nigellae.*
Kornblumen—*Flor. cyani.*, auch *Flor. rhoeados.*
Kornblumensaft—(*Sir. rhoeados.*)
Kornrosen—*Flor. rhoeados.*
Korrigeen—*Carrageen.*
Koschnilge—*Coccionella.*
Krähenaugen—*Sem. strychni* (!)
Krähensot—*Kreosot.*
Krämpftropfen—*Tinct. valerianae.*
Krätzsalbe—*Ungt. sulfurat., Ungt. contra scabiem, Ungt. hydrarg. alb.*
" gelbe—*Ungt. sulf. comp.*
" rothe—*Ungt. hydr. rubr.*
" weisse—*Ungt. hydr. alb.*
Krätzwurzel—*Rad. hellebori albi* (!) (*Rad. helleb. nigr. pulv. !*
Kräuter, aromatische—*Spec. aromaticae.*
" Lieber'sche—*Herb. galeopsid. grandifl.*
Kräuterbalsam—*Mixt. oleom. balsam*
Kräutergeist—*Spir. melissae comp.*
Kräuteröl—*Ol. capillor. rubr.*, auch *Ol. coctum vir., Ol. hyoscyami.*
Kräutersalbe—*Ungt. rosmar. comp.*
Kräuterspiritus—*Spir. angelic. comp.*
Kräutig=Kraut.
Kräwtsteen—*Lap. cancrorum.*
Kraftmehl—*Arrowroot.*
Krallenmehl—*Lycopodium.*
Kramkümmel—*Fruct. carvi.*
Krampfäpfel—*Colocynthides.*
Krampftropfen—*Tinct. valerianae.*
Krampftropfen, weisse—*Spir. aethereus, Spir. melissae comp., Tinct. valer. aeth.*
Krampfwurzel—*Rad. valerianae.*
Kranötbeere } *Fruct. juniperi.*
Krantwettbeere }
Krapp } *Rad. rubiae tinctor.*
Krappwurzel }
Krauseminze—*Mentha crispa.*
Krebsaugen—*Lap. cancrorum.*
Krebsaugenpulver—(*Conch. praep.*)
Krebssteine—*Lap. cancrorum.*
Kreidenelken—*Caryophylli.*
Kreuzbeeren—*Fruct. spinae cerv.*
Kreuzblumen—*Herb. polygalae amarae.*

Kreuzdistel—*Herb. galeops. grandiflorae.*
Kreuzdornbeeren—*Bacc. spinae ccrv.*
Kreuzdornsaft—*Sir. spinae ccrvin.*
Kreuzenzian—(*Rad. gentianac.*)
Kreuzkörner—*Scm. nigellac.*
Kreuzkraut—*Herb. cardui bencdicti.*
Kreuzkümmel—*Scm. nigellae.*
Kreuzpflaster—*Empl. oxycroc.*
Kreuzthee—*Cort. rhamni frang.*
Kreuzzugpflaster—*Empl. oxycroceum*
Kritzensaft—*Succ. liquiritiae.*
Kropfsalbe—*Ungt. kalii jodati.*
Kropfwurzel—*Rad. polypodii.*
Krummholzöl, Krummholztropfen } *Ol. ligni juniperi* / *Ol. pumilionis.*
Kruseminte—*Mentha crispa.*
Krusochsenpflaster — *Empl. oxycroceum.*
Kruut—*Kraut.* [*ceum.*
Kruziuspflaster—*Empl. oxycroc.*
Kubebenpfeffer—*Cubebac.*
Kuckelskörner, Kuckuckskörner, Kuckuckssaat } (*Pulv. pediculor.*). *Sem. cocculi.* (!)
Kuckucksöl—*Ol. hyperici.*
Kuckuckssalbe—*Ungt. hydrargyri dilut.*
Küchenschelle—*Hcrb. pulsatillae.*
Kühlpulver—*Pulv. temperans.*
Kühlsalbe—*Ungt. plumbi.*
Kühlwasser—*Aq. plumbi.*
Kükenkümmel—*Hcrb. serpylli.*
Kümmel—*Fruct. carvi.*
" römischer—*Fruct. cumini.*
" schwarzer—*Scm. nigellae.*
" spanischer—*Fruct. cumini.*
Kümmelöl—*Ol. carvi.*
Kuhblumenkraut—*Herb. taraxaci.*
Kujonenpflaster—*Empl. plumbi comp*
Kumpavabalsam—*Bals. copaivae.*
Kupferaugenrauch, Kupferrauch, Kupferroth } *Zinc. sulfuric.*
Kupfervitriol—*Cuprum sulfuricum.*
Kupferwasser—*Fcrr. sulfuric.*
Kurassaoschalen—*Cort. aurantii.*
Kurbelkraut—*Herba millefolii.*
Kurella'sches Brustpulver—*Pulv. liquirit. comp.*
Kurkumee—*Rad. curcamàc.*
Kurz und lang—*Rad. victorial. rot.* [*et long.*
Kuttelfisch—*Os sepiac.*
Kuttelkraut—*Herb. majoranac.*
Labaraque's Flüssigkeit — *Javelle* Wasser.
Labkraut—*Hcrb. galii veri, Hcrb. scrpylli.*
Lachenknoblauch—*Herb. scorbii.*
Lärchenbalsam—*Tcrebinth laricina, Balsam fir.*
Lärchenschwamm—*Agaricus albus.*
Läusekraut—*Herb. pedicularis, Herb. lcdi pal, Hcrb. scordii.*
Läusepulver—*Flor. pyrethri ros. pulv*
Läusesalbe—*Ungt. hydrarg. cin. dilut*
Läusesamen—(!) *Sem. cocculi.*
Lakrizen—*Succus liquir. in bacillis.*
Lakrizenholz—*Rad. liquiritae.*
Lampert's Pflaster—*Empl. fuscum.*
Lampert's Tropfen—*Elix. ad long vit.*
Langer Anis—*Fruct. focniculi.*
Lappenpulver—*Rad. jalapac pulv.*
Latschenöl—*Ol. pini pumilionis.*
Latschsalbe—*Ungt. rosmarini comp.*
Lattigblüthen—*Florcs farfarae.*
Latvere—*Electuarium e senna.*
Laugensalz, flüchtiges—*Ammon. carbon.*
Laugenstein — *Natr. carbon.*, auch *Natr. caustic.*
Laurinusschmiere—*Ol. laurin.*
Laussalbe—*Ungt. hydr. cin. dilut.*
Lauswurz—*Rad. hellcbori albi.*
Lavender—*Flor. Lavandulae.*
Laxirmus—*Elcct. e scnna.*
Laxirpillen—*Pilulae laxantes.*
Laxirpulver—*Pulv. tubcr. jalapae, Pulv. liquirit. comp.*
Laxirtrauk—*Infus. Senn. comp.*
Laxirsalz—*Magnes. sulfurica.*
Laxirthee—*Spec. laxantcs.*
Lebensbalsam—*Mixt. olcos. balsam.*
Lebensbaum—*Thuja occidentalis.*

Lebenselixir } *Elix. ad longam vitam.*
Lebensessenz }
Lebenskraut—*Herb. thujae occid.*
Lebensöl—*Mixt. oleos. bals.*
Lebenspulver—*Pulv. liquir. comp.*
Lebensweckeröl—(*Ol. amygdal. gram. 5, Ol. croton. gutt. 1.*)
Lebensspiritus—*Spir. angelicae compos.*
Lebenstropfen—*Elix. ad long. vitam.*
Leberaloe—*Aloë.*
Leberblumen—*Flor. hepaticae* (*Flor. malvae vulg.*)
Leberessenz—*Elix. ad long. vitam.*
Leberkraut—*Herb. hepaticae.*
Leberpillen—*Pil. laxantes.*
Lebersalz—*Sal. thermar. carol. artific*
Leberstock—*Rad. levistici.*
Leberthran—*Ol. jecoris aselli.*
Lebertropfen—*Elix. ad long. vitam.*
Leberwurzel—*Rad. arnicae.*
Lederblüthen—*Flor. stoechad. citr.*
Lehmblätter—*Fol. farfarae.*
Leichdornpflaster—*Empl. fuscum.*
Leinkraut—*Herb. linariae.*
Leinkuchen—*Scm. lini pulv.*
Leinmehl—*Scm. lini pulv.*
Leinöl—*Ol. lini.*
Leinsalbe—*Ungt. linariae.*
Leinsamen—*Sem. lini.*
Leinsamensaft—(*Sir. althaeae.*)
Lerchenbalsam—*Terebinth. laricina. balsam fir.*
Lerchenschwamm—*Agaricus albus.*
Lieber'sche Kräuter } *Herb. galeopsidis grandifl.*
Lieber'scher Brustthee }
Liebstöckelwurzel—*Rad. levistici.*
Lilienconvallen—*Flor. convallariae.*
Lilienöl—(*Ol. olivar. alb., Ol. adipis*)
Lindenblüthensaft—(*Syr. althaeae.*)
Linariensalbe—*Ungt. linariae.*
Lindenbaumöl—(*Ol. olivarum.*)
Lindenblüthen—*Flor. tiliac.*
Lindenkohle—*Carbo pulv.*
Liniment, flüchtiges—*Linim. ammoniat.*
Linsaat—*Sem. lini.*
Lippenpomade—*Cerat. labiale.*
Lipstock—*Rad. levistici.*
Liquor, Hoffmannscher—*Spir. aethereus.*
Litschpulver—*Talcum pulv.*
Löffelkraut—*Cochlearia officinalis.*
Löwenzahn—*Taraxacum.*
Lohrbern } *Fruct. lauri.*
Lohrbohnen }
Lorbeeren—*Fruct. lauri.*
Lorbeersalbe—*Ungt. laurinum.*
Lorettosalbe—*Ol. laurinum.*
Lorkraut—*Herb. veronicae.*
Loröl—*Ol. laurinum.*
Lorö-Althe—*Ol. laurin., Ungt. flav. aa*
Luchtsam—*Sir. althaeae.*
Luftapfel—*Fruct. colocynthidis.*
Luftig und geschwind—*Liq. ammon. caust.* (*!*).
Luftsaft } *Sir. althaeae.*
Luftsam }
Lufttropfen—*Spir. aethereus.*
Lungenkraut—*Herb. pulmonariae.*
Lungenkrautpulver—*Pulv. liquirit. comp.*
Lungenmoos } *Herb. pulmonariae arb.* (*Lich. pulmonariae.*)
Lungen- u. Leberkraut }
Lungenpulver—*Pulv. liquir. comp.*
Lungenwurzel—*Rad. petroselini.*
Maaslieben—*Flor. bellidis.*
Machandel } *Juniperus.*
Macholder }
Mädchenhaar—*Adianthum capill. veneris.*
Mändelthee—*Herb. trifolii arvensis.*
Männlein und Weiblein—*Rad. victorial. long. et rot.*
Mäselsalbe—*Ungt. digestivum.*
Mäuseholz—*Stip. dulcamarae.*
Mäusezwiebeln—*Rad. scillae.*
Magenbalsam—*Ol. nucistae, Bals. nucist.*
Magenelixir—*Elix. aurant. comp.*
Magenessenz—*Tinct. amara.*
Magenpulver—*Natr. bicarbon., Magnes. c. Rheo.*

Magensalz—*Natr. bicarbonicum.*
Magentropfen, bittere—*Tinct. amara.*
" Danziger—*Elix. aurant. comp., Tinct. aromat.*
" weisse—*Spirit. aethereus.*
Magerblumen—*Flor. rhoeados.*
Magnetpflaster—*Empl. oxycroceum.*
Magnetspiritus—*Spir. aethereus.*
Magretenpulver—*Pulv. foeni graeci.*
Mahagoniwurzel—*Rad. alcannae.*
Maiblumen—*Flor. convallar majal.*
Maiblumentabak—*Pulv. sternutator*
Maibutter—*Ungt. majoranac.* [*vir.*
Maiöl—*Ol. olivar. alb.*, auch *Ol. coctum vir.*
Mairan—*Herb. majoranae.*
Mairanbutter—*Ungt. majoranae.*
Maitropfen—*Tinct. aromatica.*
Maiwürmeröl—*Ol. lumbricor.*
Maiwuchsöl—*Ol. pini.*
Malaktikumpflaster—*Empl. meliloti, plumbi comp.*
Malkaspiritus—*Spir. angelicae.*
Malvenblumen—*Flor. malvae silvestris und arbor.*
Malvenkraut—*Folia malvae.*
Malvensaft—(*Sir. rhoeados.*)
Mandelcerat—*Ungt. rosat., Cerat. cetacei.*
Mandelkleie—*Farina amygdal. odorata.*
Mandelmilch—*Emuls. amygd.* (*Syr. amygdal. 1, Aq. dest. 5 p.*)
Mandelöl—*Ol. amygdalarum.*
Mangelsalbe, grau—*Ungt. c. scabiem gris.*
Mannablätter—*Fol. sennae c. manna.*
Mannasaft—*Sir. mannae, Sir. sennae mannat.*
Mannazucker—*Manna electa, Manna tabulata.*
Marantenmehl—*Amylum maranthae.*
Marderkraut—*Herb. mari veri.*
Marderwitterung—*Herb. mari veri,* auch *Zibeth. artific.*
Margarethensaft—*Sir. flor. aurantii.*
Mariareinigung—*Herb. rosmar.*
Mariareinigungstropfen—*Tinct. cinnamomi.*
Mariazeller Tropfen—*Elix. ad long. vitam.*
Marienbader Thee—*Spec. laxantes.*
Marienblätter—*Herb. tannaceti.*
Marienblümchen—*Flor. bellidis.*
Mariendiestelsamen — *Sem. cardui mariae.*
Mariengeist—*Spir. meliss. comp.*
Marienglöckchen—*Flor. convall.*
Marienkraut—*Herb. matrisylvae.*
Mariennessel—*Herb. marrubii.*
Marientropfen—*Spir. rosmarini.*
Marienwürmchen—*Coccionella.*
Markasseröl—*Ol. capillor. rubr.*
Markgrafenfett—*Ungt. hydrarg. cin. dil.*
Markgrafenpulver—*Pulv. tempcrans.*
Marköl—*Ol. adipis.*
Martertropfen—*Tinct. amara.*
Marumverum—*Herb. mari veri.*
Maserpflaster—*Empl. fuscum.*
Masseran—*Herb. majoranae.*
Massikot—*Lithargyrum.*
Mastichkraut—*Herb. mari veri.*
Materialsalbe—*Ungt. hydrarg. cin.*
Maubeeren—*Fruct. myrtilli.* [*dil.*
Mauchkraut—*Herb. galeopsid. grandifl.*
Mauerpfeffer—*Herb. sedi acris.*
Mauerraute—*Herb. rutae murar.*
Maulbeersaft — *Sir. mororum* (*Sir rhoeados.*)
Mausöhrchen—*Herb. hieracei pilosellac, Herb. myosotis.*
Meerrettig—*Rad. cochleariae armoraceae.*
Meerrettigspiritus—(*Spir. sinapis di-*
Meerstinz—*Stincus marinus.* [*lut.*)
Meerthau—*Herb. rosmarini.*
Meerzwiebel—*Bulbus scillae.*
Meerzwiebelhonig } *Sir. scillae.*
Meerzwiebelsaft }
Meiran—*Herb. majoranae.*
Meiransbutter—*Ungt. majoranae.*
Meistertropf—*Tinct. chinoidini.*

Meisterpflaster—*Empl. fuscum.*
Meisterwurzel—*Rad. imperatoriae.*
Melotenkraut—*Herb. meliloti.*
Merkurialbalsam (innerlich) — *Elix. ad long. vitam.*
Merkurialpflaster—*Empl. hydrarg.*
Merkurialsalbe—*Ungt. hydrarg. cin. dil.*
Merkurius, blauer—*Ungt. hydrarg. cin. dilut.*
Miendelthee—*Herb. trifol. arvensis.*
Mierenspiritus—*Spir. formicar.*
Milchvertheilungspflaster—*Empl. sapon. camph., Empl. meliloti.*
Milchverzehrungspflaster—*Empl. fusc.*
Milzessenz—*Tinct. cort. aurant.*
Mindrer's Geist } *Liq. ammon. acetici.*
" Spiritus }
Minutenpflaster—*Empl. meliloti.*
Minze—*Mentha.*
Mirakelpflaster — *Empl. saponat., Empl. fuscum.*
Mirenspiritus—*Spir. formicar.* (auch *Tinct. myrrhae.*)
Mispel } *Viscum album.*
Mistel }
Mithridat—*Electuar. theriaca.*
Mizelthee—*Herb. trifol. arvens.*
Moderpflaster—*Empl. fuscum.*
Möhrensaft—*Succus dauci.*
Mönchspulver—*Pulv. pedicularum.*
Möschthee—*Herb. matrisylvae.*
Mohnblumen—*Flor. rhoeados.*
Mohnköpfe—*Fruct. papaveris.*
Mohnöl—*Ol. papaveris.*
Mohnrautensaft—*Sir. alth. et Sir. papaver. aa.*
Mohnrosen—*Flor. rhoeados.*
Mohnsaft—*Sir. papav., Sir. rhoeados.*
Mohrenbalsam—*Bals. peruvian.*
Mohrrübensaft—*Succ. dauci.*
Monatblümchenthee—*Flor. bellidis.*
Monatstropfen—*Tinct. ferri pomati.*
Monicaöl—*Ol. hyperici.*
Moos, Irländisches—*Carrageen.*
" Isländisches—*Lich islandicus.*
Moschatenblüthe—*Macis.*
Moschatennuss—*Sem. myristicae.*
Moschuswurzel—*Rad. sumbuli.*
Mottenblume—*Flor. stoechados.*
Mottenkraut — *Herb. ledi palustr., Herb. chenopodii, Herb. patschouli.*
Mottenspiritus — *Spir. camphor c. tinct. capsici.*
Mückenfett—(*Adeps.*)
Mückenöl—*Ol. caryophyll.*
Mückensauger—*Empl. vesic. Drouotti*
Mückenstaub, gelber—*Lycopodium.*
Müuze—*Mentha.*
Müsch's Thee—*Fol. uvae ursi.*
Mundfäulesaft — *Mel. rosat.* (oder *Syr. moror.*) *c. boracc.*
Mundreinigung—*Mel. rosat.*
Murrjahnskräuter — *Spec. ad cataplasm.*
Musikantenöl—*Ol. olivarum*, auch *Ol. anisi.*
Muskatbalsam—*Bals. nucistae.*
Muskatbutter—*Ol. nucistae.*
Muskatnüsse—*Sem. myristicae.*
Muskatöl—*Ol. macidis.*
Muskensalbe—*Ungt. zinci*, oder *Ungt. hydrarg. rubr.*
Mutterbalsam—*Aq. aromatica, Mixtur. oleosobals., Elix. ad long. vitam.*
Mutterbandpflaster—*Empl. fuscum.*
Mutteressenz } *Tinct. valerian. aeth.,*
Mutteressenz- } auch *Tinct.*
Koliktropfen } *cinnamomi.*
Mutterharz—*Galbanum.*
Mutterharzpflaster — *Empl. galbani croc., Empl. plumbi comp.*
Mutterhohlwurz — *Rad. aristoloch. long.*
Mutterkorn—*Secale cornutum* (!)
Mutterkörner—*Fruct. amomi.*
Mutterkrampfpulver—*Tub. jalap. et Rad. rhei.*
Mutterkrampftropfen, rothe oder weisse—*Spir. aethereus, Tinct. valer. aeth., Tinct. cinnamomi.*

Mutterkraut — *Herb. matricariae, Herb. melissae.*
Mutterkümmel—*Fruct. cumini.*
Mutterlorbeern—*Bacc. lauri.*
Mutternägelchen, Mutternelken } *Antophylli.*
Mutterpillen—*Pil. laxantes.*
Mutterpflaster, Muttersalbe } *Empl. fuscum.*
Mutterspiritus—*Spir. mastich. comp.*
Mutterstillstandstropfen—*Spir. aether., Tinct. cinnamomi.*
Mutterthee — *Herb. melissae,* auch *Spec. laxantes.*
Muttertropfen—*Tinct. cinnam., Tinct. valerian.*
" weisse—*Spir. aethereus, Spir. meliss. comp.*
Mutterwurzel—*Rad. artemis., Rad. arnicae.*
Mutterzimmt—*Cass. cinnamom.*
Myrrhen (rothe)—*Myrrha.*
Myrrhenessenz—*Tinct. myrrhae.*

Nabelbruchpflaster—*Empl. fuscum.*
Nabelbruchsalbe—*Empl. adhaesivum.*
Nabelpflaster—*Empl. saponat., Empl. fuscum.*
Nachtschatten—*Herb. solani nigri.*
Nachtschattenöl—(*Ol. hyoscyami.*)
Nägelchen, Nägelein—*Caryophylli.*
Nägeleinwurzel—*Rad. caryophyllati.*
Nährmehl—*Arrow root.*
Nagelkraut—*Herb. marrubii.*
Naphtha—*Aether, Spir. aethereus.*
Nasam—*Asa foetida.*
Natterwurzel—*Rad. bistortae.*
Neapolitaner Salbe—*Ungt. hydrarg.*
Nelken—*Caryophylli.* [*cin. dilut.*
Nelkenessenz—*Spir. lavandul. comp.*
Nelkenöl—*Ol. caryophylli.*
Nelkenpfeffer—*Fruct. amomi.*
Nelkenwurzel—*Rad. caryophyllatae.*
Nervengeist—*Linim. saponis.*
Nervenöl—*Ol. coct. viride, Ol. camphorat., Linim. saponis.*
Nervensalbe—*Ungt. rosmar. comp.*
Nervenspiritus — *Linim. saponis,* (*Mixt. ol. bals. et Spir. rosmar aa.*)
Nerventinctur—*Spir. aethereus ferrat Tinct. valer. aeth.*
Nerventropfen—*Spir. aethereus ferrat.*
" saure—*Aether acetic, Tinct. aromat. acid.*
Nervenwasser—*Aq. aromatica.*
Nesselblüthe—*Flor. lamii albi.*
Nesselkraut, Nesselthee } *Herb. urticae.*
Neugelenk—*Herb. serpylli.*
Neugewürz—*Fruct. amomi.*
Neunerlei Gewürz—*Pulv. aromaticus.*
Nichts weisses—*Zinc. oxydat.,* auch *Zinc. sulfur.*
Nichtssable—*Ungt. zinci.*
Niedergeduldstropfen — *Spir. nitric. aeth.*
Niederschlagendes Pulver, Niederschlagpulver } *Pulv. temperans.*
Niespulver, weisses—*Pulv. sternutatorius albus.*
" grünes—*Pulv. sternutatorius viridis.*
Niessalbe, weisse—*Ungt. hydrargyri album, Ungt. zinci.*
Nieswurzel, schwarze—*Rad. hellebori nigri.*
" weisse—*Rad. hellebori albi.* (!)
Nitridulces—*Spir. aether. nitros.*
Nixmehl—*Lycopodium.*
Nixsalbe—*Ungt. zinci.*
Nixstaub—*Lycopodium.*
Norbeln—*Fruct. lauri.*
Nürnberger Pflaster—*Empl. fuscum.*
Nussblätter—*Fol. juglandis.*
Nusskerne, schwarze—*Sem. paeoniae.*
Nussöl—*Ol. nuc. jugland.* (*Ol. sem. gossypii.*)
Nusschalen—*Cort. fruct. juglandis.*

Obstructionspillen—*Pilulae laxantes.*
Ochsenkrautspflaster, Ochsenkreditpflaster, Ochsenkrutiuspflaster } *Empl. oxycroceum.*

MONTHLY REVIEW.

Phytochemistry.

Methyl Alcohol and Diacetyl from Caraway Fruit.—A considerable time ago,[1] Schimmel & Co. reported that methyl alcohol and furfurol are produced in the course of the distillation of cloves and clove stems. These substances are held in solution in the water of distillation and are obtained in the first runnings in the process of cohobation. On the investigation of the water of distillation of caraway, they have now made the same discovery with regard to that product, only the two aforenamed compounds are not present in such large proportions as in the distillation of cloves and clove stems. The methyl alcohol was identified by its boiling point and by the melting point of its acid oxalate, furfurol also by its boiling point, by the melting point of its phenyl-hydrazone and by the color-reactions with aniline and p-toluidine.

Another fact, which had already attracted attention in the course of the distillation of the methyl alcohol from cloves, was again noticed on this occasion:—the first runnings are uniformly of an intense yellow colour; in spite of careful and repeated fractionation, the methyl alcohol also distils over coloured yellow; nor does it in any way show its proper boiling point. It does not lose its colour until after treatment with sodium and lime; and at the same time it loses its aldehyde-like odour (acetaldehyde occurs in large proportions during the distillation of caraway), and reverts to its proper boiling point.

At first it was surmised that aldehyde was present, but this does not seem to be so; the results so far obtained indicate rather the presence of diacetyl ($CH_3.CO.CO.CH_3$), for when phenyl-hydrazine was added to the yellow methyl alcohol, the alcohol distilled over at the proper boiling point, while diacetylosazone separated out melting at 243° after recrystallisation from benzol. It is true that H. von Pechmann has observed[2] that acetaldehyde-phenyl-hydrazone yields diacetylosazone when left standing for a long time with an excess of phenyl hydrazine in acetic acid solution, and as it was not impossible that the same reaction (towards which all indications pointed) might also take place in an alcoholic solution, it became necessary to prove the presence of diacetyl in another way. Acetaldehyde (as shown by a special experiment) reacts with hydroxylamine, even when the latter is present in great excess, only under the formation of acetaldoxime. But the methyl-alcoholic first runnings of caraway yield, under similar conditions to the aldehyde solution, diacetyl dioxime, melting point 234.5°.

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[1] Reports, October 1896, p. 27; April 1897, p. 45.
[2] Berichte d. deutsch. chem. Ges. 31 (1898), p. 2124.

The presence of diacetyl is furthermore indicated by the yellow colour and the slightly acrid, chinone-like odor of the methyl alcohol, both of which disappear when ammonia or bisulphite solution and dilute soda solution are added. [Ber. Schimmel & Co., Oct. '99, p. 12.] *E. K.*

On the Assay of Eucalyptus Oils.—The efficacy and fairness of the British Pharmacopœia tests for eucalyptus oil have been repeatedly criticised in the English pharmaceutical press. The British Pharmacopœia admits, for medicinal purposes, not only oil of *Eucalyptus Globulus*, but also that of other varieties of eucalyptus, provided it responds to the following tests: Sp. gr. 0.910° to 0.930°; opt. rot. (100 mm. tube) not more than 10° either to the right or to the left; when mixed in the cold under stirring, the oil must form a semi-solid mass with half its own weight of phosphoric acid (sp. gr. 1.750); with sodium nitrite and glacial acetic acid it must give no phellandrene reaction. Baker and Smith[1] (both of whom have rendered excellent service in the scientific investigation of the eucalyptus and their oils), are of the opinion that the minimum specific gravity has been fixed too high, because it excludes from medicinal use many oils which are rich in eucalyptol. They give several examples of oils of a lower specific gravity than 0.910, which yet respond thoroughly to the phosphoric acid test.

Schimmel & Co. do not regard this objection as well-founded, for there will always be sufficient oils of the required specific gravity; on the contrary, greater value they claim should be attached to the density, based in this case upon high grade globulus oils, than to the comparatively untrustworthy phosphoric acid test. They hold that it would be more reasonable to object to the indiscriminate admission of varieties of eucalyptus oil, the constituents of which are unknown, and concerning whose pharmacological action we have as yet no experience. As they already expressly pointed out in their last Report, all such differences might have been avoided, if pure eucalyptol had been admitted into the British Pharmacopœia. The use of eucalyptol is further to be recommended because the purity of this body may be easily and rapidly ascertained by the determination of its physical characteristics.

Up to the present, the determination of the eucalyptol-content of essential oils according to Scammel's phosphoric acid method has always given results greatly differing from the reality, whenever mixtures of known eucalyptol-content have been employed. Contrary to this fact, the figures recently obtained by W. H. Allen[2] tally exceedingly well with the calculated figures. The investigation was made on mixtures of pure eucalyptol with

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1 Chemist and Druggist, 54, (1899), p. 864.
2 Ibidem, 54, (1899), p. 641.

the other constituents of a eucalyptus oil, freed from eucalyptol[3]. In the case of samples containing over 50 percent, divergencies of 1½ percent at the most were observed; the maximum-divergence, in the case of a eucalyptol-content of from 20 to 50 percent, being only 2½ percent. In the case of oils with less than 20 percent eucalyptol, the phosphoric acid test proved useless. If these statements should receive confirmation, nothing further would stand in the way of the adoption of this process for commercial purposes. Neither S. & Co. nor other investigators, however, have thus far succeeded in obtaining results tallying even approximately so closely as those above mentioned.

[Report S. & Co., Oct. '99, p. 31.] *E. K.*

Occurrence of Methyl Salicylate.—Among the violet family, the exotic *Alsodeia cymulosa* Miq. (*Rinorea* Aubl.) was known to contain methy salicylate. That the root of the ordinary *Viola tricolor* gives off the odor of methyl salicylate was pointed out by H. Kraemer (Inaug.-Diss., Marburg, 1897) who also calls attention to the fact that the presence of salicylic acid in the herb was demonstrated in Dragendorff's laboratory. This suggestion has led Schimmel & Co. to prepare the oil. The green, flowering plant, with the root, yielded upon distillation only a very slight proportion of essential oil, viz. 0.00859 percent, possessing a powerful odour of wintergreen oil, the small quantity available for research, when saponified, yielded salicylic acid, melting point 156°, in an almost quantitative proportion; the oil, therefore, appears to consist almost entirely of methyl-salicylate.

According to investigations by Dr. van Romburgh, of Buitenzorg, (Java), the following varieties of Acacia (N. O. *Leguminosae*) contain methyl salicylate, viz. *Acacia Intsia* Willd., *A. pluricapitata* Steind., *A. sarmentosa* Desv., and *A. tenerrima* Ingh. To these we may add *A. Farnesiana*, in the flowers of which we found methyl salicylate long ago.

[Report S. & Co., Oct. '99, p. 56.] *E. K.*

Oil of Jasmine Flowers.—This oil has been subjected to investigation by Walbaum,[1] Hesse[2] and by H. and E. Erdmann[3] in recent years, the results being a rather striking contribution to the chemistry of volatile oils. The present status of the composition of the oil is given by Hesse as follows:

3.0 p. c. Jasmone, $C_{11}H_{16}O$.
2.5 p. c. Indol, C_8H_7N.
0.5 p. c. Anthranitic acid methyl ester, $C_8H_9W_2$.
65.0 p. c. Benzyl acetate, $C_9H_{10}O_2$.

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[3] These portions were of 0.876 sp. gr. at 15°; opt. rot. $\alpha_D = -31°$. The oil, therefore, cannot have been globulus oil, as assumed by Allen, inasmuch as globulus oil is dextrogyrate.

[1] Journ. f. pr. Chem. 59, p. 350; Ber., 32, p. 1512.
[2] Ber., 32, pp. 562 and 765.
[3] Ber., 32, p. 1213.

7.5 p. c. Linalyl acetate, $C_{12}H_{20}O_2$.
6.0 p. c. Benzyl alcohol, C_7H_8O.
15.5 p. c. Linalool, $C_{10}H_{18}O$.

The presence of a "volatile alkaloid" as one of the principal odoriferous constituents of an oil may shock the chemical sensibilities of some. Furthermore, Hesse calls attention to the fact that indol and the ester of anthranitic acid are decomposition products of indigo and thus points to a possible genetic relationship between coloring matters of plants and volatile oils. [Ber. 32, p. 2611.] *E. K*

Ethereal Cress-oils and their Underlying Glucosides.—The chemistry of several cruciferous oils has undergone considerable change in recent years owing principally to the investigations by Semmler and Gadamer. The latter in a recent article reports on several cruciferous oils and the glucosides from which they are obtained in an article under the above title. He had previously shown that the Indian cress or garden nasturtium, *Tropæolum majus*, when properly treated, yields a true mustard oil, not benzyl cyanide as had been found by A. W. Hofmann. The explanation for this discrepancy is that, according to Hofmann's method of preparing the oil, the ferment does not get an opportunity to act on the glucoside. Hofmann's oil, was, therefore, not a product of hydrolysis of the glucoside, but a decomposition product due to the action of the heat. Inasmuch as Hofmann had likewise obtained from the garden cress, *Lapidium sativum*, benzyl cyanide and from the water cress, *Nasturtium officinale*, but no mustard oils, Gadamer suspected that in these instances also true mustard oils might be obtained by the proper treatment of the plants.

1. The seeds of the garden cress when subjected to action of water and some powdered white mustard seed, yielded upon distillation an oil which formed with ammonia, benzyl thiourea, as shown by the melting point and sulphur determination. As in previous investigations, the glucoside could not be isolated, but the silver salt of its product of hydrolysis, the tropæolinic acid, was obtained in a crystalline state.

Gadamer supposes that the oil from the herb has the same composition as that of the seed.

2. By the action of the ferment of white mustard on the herb of *Nasturtium officinale*, a true mustard oil was likewise obtained, as was shown by the formation of phenylethylene thiourea. The oil therefore consists of phenylethylene iso-sulphocyanate, $C_6H_5.CH_2CH_2.NCS$, which was also found in the oil from the roots of mignonette by Bertram and Walbaum.

In this case also the glucoside could not be isolated in crystalline form, but the crystalline silver salt of the nasturtic acid, the product of hydrolysis, was obtained. By means of sodium thiosulphate, this is converted into the sodium salt, which, being unstable, breaks up into sodium sulphate and a true mustard oil.

3. The seeds of the American perennial winter garden cress, *Barbaræa præcox* Brown, was also found to yield phenylethylene mustard oil. Glucoside is therefore supposed to be identical with gluconasturtiin, $C_{15}H_{20}NKS_2O_9$.

[Arch. f. Pharm., 237, p. 567.] *E. K.*

Ethereal Extract of Male Fern.—In addition to the long known filicic acid, Boehm had found in 1897 a number of new crystalline substances which he called aspidin, aspidium, albaspidin, flavaspidic acid and aspidinol, the properties, composition and action of which he examined and reported on in 1897. At Boehm's request, Hausmann has examined 21 extracts and as a result of his investigations arrives at the following conclusions:

1. The occurrence of aspidin in commercial extracts indicates that these are not prepared from *Aspidium filix mas* Sw., but in all probability from *A. spinulosum* Sw.

2. Filicic acid is always found in the extracts from *A. filix mas* Sw. when prepared according to directions. This acid, however, is not restricted to this species, for its presence in *Anthyrium filix femina* Roth could be demonstrated.

3. Flavaspidic acid could be identified in all of the examined extracts, whether obtained from the rhizome of *As. spinulosum* Sw., *As. filix mas* Sw., or *Ath. filix femina* Roth.

4. Boehm had shown the presence of albaspidin and aspidinol in extracts containing aspidin; their presence in extracts containing filicic acid has now also been demonstrated.

The author emphasizes that his investigation was a qualitative one and that an assay of the preparation is as yet out of the question for two reasons: viz. first, the difficulties of a quantitative isolation must first be overcome; and secondly, the question to which one of the numerous constituents male fern owes its taenifuge properties is still a mooted question.

[Arch. d. Pharm., 237, p. 544.] *E. K.*

On the Chemical Composition of Norwegian Pine Tar.—A detailed examination of Russian pine tar has been made by Nencki and Sieber. Ström now reports in detail on the acids and phenols of the Norwegian tar from *Pinus sylvestris*. The tar is made in the most primitive manner by the farmers. The "fatty" roots which are rich in resin are packed firmly in a hole, a crevice or some other convenient natural formation and ignited. When the material is burning well, it is covered over with peet or earth so that air has but slight access. The products of the downward distillation are scooped out after the charcoal has been removed. 30 kilo of such a "farmer's tar" was examined. It contained more volatile products than the Russian tar. The volatile portion consisted of acids, 4.75 p. c. (calculated as acetic acid); phenols, 10.94 p. c.; and hydrocarbons, 60.80 p. c. The following acids were identified: formic, acetic, propionic, n-butyric, valerianic

(Renard's), n-valerianic, methyl-propyl-acetic, n-capronic, œnanthic, and n-caprylic acids. Pelargonic acid, caprinic acid and o-pimaric acid are probably also present. The following phenols were also identified: Cresol, guiacol, creosol, ethyl guaiacol, propyl guaiacol, a-phenol ($C_{11}H_{16}O_2$) and a-phenol $C_{12}H_{14}O_2$. Of the hydrocarbons about 14 p. c. were solid and 86 p. c. liquid. These were not examined in detail. Terpenes are undoubtedly present, also a large amount of setene. [Arch. d. Pharm., 237, p. 525.] *E. K.*

Oil of Radish. — Bertram and Walbaum have noticed the similarity in the odors of radish and phenylethylene mustard oil, but upon distillation could not obtain a trace of a mustard oil. Gadamer repeated their experiments taking precautions to have a ferment act on the glucoside of the radish. He also obtained no mustard oil and concludes that it is so unstable as to be decomposed even by distillation with water vapor. By working with the extract of the root he obtains indications of the formation of a true mustard by ferment action on the glucoside. A more thorough study is to follow. [Arch. d. Pharm., 237, p. 520.] *E. K.*

Practical Pharmacy.

The Assay of Syrupus Ferri Iodidi. — The following method of assay of the above syrup of the B. P. is recommended by F. H. Alcock as giving the most accurate results as to iron content. 80 cc. of distilled water is placed in a 100 cc. graduated, glass stoppered cylinder. 1 gm. of sodium carbonate is dissolved in the water, and then the volume made up to 90 cc. 10 cc. of syrup of ferrous iodide is then added and the liquid shaken vigorously and then filtered at once through a dry filter. 85 cc. of filtrate may be obtained in this manner. In the subsequent titration acetic acid diluted is used to neutralize the excess alkali. Potassium chromate indicator should be used sparingly. White porcelain dishes are preferred to glass flasks.

[Pharm. Jour., 65, p. 379.] *W. O. R.*

Wiedergewinnung von Quecksilber aus ranzig gewordener „Grauer Salbe". — Russwurm gives the following simple process for regaining the mercury of rancid mercurial ointment. The ointment is melted, when two layers separate, the lower containing the mercury in a mixture of mercury, mercury salts of fatty acid and fats. This layer is separated from the upper layer of fat, and then heated with an excess of a 5 p. c. solution of sodium hydroxide. The metallic mercury, which is liberated in but a few minutes is separated, purified by washing with water, dried by shaking with shredded filter paper and then run through a finely punctured filter.

[Pharm. Centrlbl., 40, p. —, through Zeitschrf. d. A. Oe. Apoth. Ver., 37, p. 769.] *W. O. R.*

Commercial Extract of Licorice.—Edwin Dowzard reports upon a series of samples of commercial extract of licorice and also gives his method of estimating insoluble matter. This method consists in dissolving 3 gm. of the powdered sample in about 200 cc. of water, at about 45° C., and allowing the solution to settle, in a tall cylinder, for six hours when the clear solution is syphoned off, and more water added to the residue; the process being repeated until the solution assumes only a light yellow color. Three washings are usually required and about six drops of ammonia water should be added to the water last added. The residue is transferred to a pair of counterpoised filters, dried, first at 50° and then at 100° C. and finally weighed.

In Spanish juice (sticks) the constituents varied as follows: Extractive, 59 to 83 p. c.; insoluble matter, 6 to 28 p. c.; water, 10 to 16 p. c.; and ash, 3.5 to 10 p. c. In block-juice the variations of constituents were: Extractive, 70—82 p. c.; insoluble matter, 1 to 11 p. c.; water, 14 to 28 p. c.; and ash, 8 to 9 p. c. [Chemist and Druggist, 55, p. 561.] *W. A. P.*

The Testing of Chloral Hydrate according to the B. P.—F. H. Alcock and T. H. Thomas find that, while the British Pharmacopœia states, "if 4 gm. of chloral hydrate be heated with 30 cc. of N/1 NaOH, no more than 6 cc. of N/1 H_2SO_4 should be required to neutralize the soda which remains free on the completion of the reaction," usually a smaller volume of acid is required, thus indicating a purity of more than 100 p. c. In one instance, when operating on pure chloral-hydrate, free from alcoholate, but 2.4 cc. of volumetric acid was required. The cause of this discrepancy is said to be due to the further oxidation of chloroform, formed in the reaction, to NaCl and formic acid by the excess of alkali present. To avoid this secondary reaction as far as possible, the directions of A. Kremel (Yearbook of Pharmacy, 1887, p. 126) should be followed and 4 gm. of chloral-hydrate be shaken vigorously, but for only a few minutes with 30 cc. N/1 NaOH and the excess of alkali determined at once. [Pharm. J., 63, p. 236.] *W. A. P.*

Electrolytic Determination of Metals in Foodstuff Analysis.—Hilger calls attention to the fact that electrolysis has found only too little favor with foodstuff analysts and gives two short methods as examples, namely the determination of zinc and tin in preserves etc. For the determination of the zinc, this is precipitated as is usual as zinc sulphide, dissolved in hydrochloric acid, the iron, which may also have been dissolved, is oxidized by the addition of nitric acid and then separated with potassium hydrate solution, and finally the alkaline zinc solution is electrolysed after adding to it sodium phosphate in order to convert it into zinc phosphate. Tin is best electrolised as ammonium sulphotannate, i. e., it is precipitated as tin sulphide and this dissolved before the electrolysis in ammonium sulphide.

[Pharm. Ztg., 44, p. 685.] *O. S.*

New Remedies.

Phenoleum, according to W. Jordan, is turpentine oil flavored with oil of melissa. It is used for antiseptic purposes.

[Chem. Ztg. Rep., 23, p. 612, through Pharm. Centrlhl., 40, p. 612.] *W. O. R.*

Eucasol is a commercial synonym for Eucalyptusanytol. See Pharm. Centrlbl., 39, p. 184. [Pharm. Centrlhl., 40, p. 625.] *W. O. R.*

Igazol is another addition to the list of preparations recommended as remedies for pulmonary tuberculosis. It is a derivative of formaldehyde.

[Pharm. Centrlhl., 40, p. 625.] *W. O. R.*

Oxymethylphthalimide is a condensation product obtained by heating formaldehyde and phthalimide. It is recommended by F. Sachs (patentee) o Berlin as an antiseptic dressing for wounds.

[Pharm. Centrlhl., 40, p. 625.] *W. O. R.*

Sphagnol (or Corbaöl.)—Risso recommends this preparation, which is a distillation product of corba, as a substitute for perubalsam, tar, ichthyol, etc. It is a mixture of benzol, anthracene, phenol, kreosol, and m-kreosol. There are two varieties, a "heavy sphagnol," containing paraffins, and a "turbid sphagnol," from which the paraffins have been removed. A soap containing 10 p. c. of sphagnol is also being used.

[Therap. d. Gegenw., 40, p. 469.] *W. O. R.*

Trioxymethylene, Paraform, 3 gm. in 27 gm. of collodion, applied three times a day, is the latest corrosive application for the removal of warts.

[Pharm. Centrlhl., 40, p. 646.] *W. O. R.*

Soson, according to R. O. Neumann is the most stable, and easiest retained by the stomach of egg albumen preparations. It is a greyish white, fine, compact powder, insoluble in water. It is odorless and tasteless. 92.5 p. c. of soson is egg albumen. The cost is but 5 M. per kilo.

[Pharm. Centrlhl., 40, p. 626.] *W. O. R.*

Didymsalicylate possesses antiseptic properties, is prepared by treating didymum hydrate or carbonate with salicylic acid, or soluble didymum salts with soluble salicylates. It is an insoluble faintly, rosecolored powder.

[Pharm. Centrlhl., 46, p. 672.] *W. O. R.*

Guajakolsalicylate is covered by French patent rights, and is prepared by heating 40 p. of salicylic acid, 35 p. of guiacol, and 25 p. of phosphorus oxychloride, for several hours on a water bath. The mixture when cool is treated with water, then sodium carbonate solution and then the residue dissolved in alcohol, ether, or benzol, from which solutions it is allowed to crystallize. The small white crystals melt at 69° C. The compound possesses antiseptic properties. [Pharm. Centrlhl., 40, p. 672.] *W. O. R.*

Literary.

Books and Pamphlets Received.

Felix Alcan—Paris. Dictionnaire de Physiologie par Charles Richet. Deuxième fascicule du tome IV, pp. 321—640. Avec gravures dans le texte. 1899.

P. Blakiston's Son & Co.—Philadelphia. A Manual of Organic Materia Medica and Pharmacognosy, an introduction to the study of the vegetable kingdom and the vegetable and animal drugs, comprising the botanical and physical characteristics, source, constituents, pharmacopœial preparations, insects injurious to drugs and pharmacal botany. By Lucius E. Sayre. Second edition, revised with histology and microtechnique by William C. Stevens. One volume, with 374 illustrations, the majority of which are from original drawings. pp. 659. 1899. $4.50.

—— The Physician's Visiting List, Lindsay & Blakiston's for 1900. Forty-ninth year of its publication.

Wilhelm Engelmann—Leipzig. Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten, insbesondere den Nutzpflanzen. Von A. Engler und K. Prantl. Lief. 190—192. (*Polypiodiaceae.*)

Ferdinand Enke—Stuttgart. Lehrbuch der Chemie für Pharmaceuten. Von Dr. Bernhard Fischer. Vierte Auflage. Ein Band, 649 S., mit 105 Textabbildungen. 1899.

R. Gaertner's Verlagsbuchhandlung — Berlin. Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Literatur. Herausgegeben von Dr. Emil Jacobson. 38. Jahrgang. Erstes Halbjahr. Zweite Hälfte, pp. 137—323, mit in den Text gedruckten Illustrationen.

Verlag von Julius Springer—Berlin. Pharmaceutischer Kalender, 1900. Mit Notizkalender zum täglichen Gebrauch für die pharmaceutische Praxis. Herausgegeben von B. Fischer und G. Arends. Zwei Theile. Berlin, 1900. $1.00.

Authors—New York. Morphology and Histology of Plants designed especially as a guide to plant-analysis and classification and as an introduction to pharmacognosy and vegetable physiology. Part. I: The morphology of plants by Henry H. Rusby. Part II: Plant histology by Smith Ely Jeliffe. One vol., with 693 illustrations. pp. xi, 378. 1899.

Author — Minneapolis. Minnesota Plant Life. By Conway Mac Millan. Report of the Survey. Botanical Series. III. One vol., pp. 568, with 4 plates and 240 other illustrations. 1899.

Verfasser—Genf. Schweizerische Beiträge zur Geschichte der Pharmacie. Von B. Reber. Pamphlet, 50 S. 1898.

—— Beiträge zur Geschichte der Pharmacie. Von B. Reber. Pamphlet, 54 S. 1899.

Reviews.

Hager's Handbuch der Pharmaceutischen Praxis.—Für Apotheker, Aerzte, Drogisten und Fabrikanten. Unter Mitwirkung mehrerer Fachmänner vollständig neu bearbeitet und herausgegeben von Dr. B. Fischer in Breslau und Dr. C. Hartwich in Zürich. Verlag von Julius Springer in Berlin. Lief. 1 bis 7. 1899.

Seit der Ankündigung einer Neuausgabe dieses weit und viel gebrauchten Handbuches in dem Märzhefte der Pharmaceutical Review (S. 135) sind in schneller Aufeinanderfolge 7 Lieferungen erschienen, welche das in alphabetischer Reihenfolge gruppirte Material auf 912 Seiten bis "Coffein" führen.

Ein so alt bekanntes und geschätztes Buch bedarf keiner neuen Empfehlung; da die Neuausgabe in diesem fast durchweg eine Neubearbeitung ohne die einstige führende Leitung des Begründers ist, liegt ein Vergleich der ersten mit der zweiten Ausgabe nahe. Diese kann das Werk der rühmlich bekannten Herausgeber sehr wohl bestehen; dieselben haben, im Besitze vieljähriger und vielseitiger beruflichen und literarischen Erfahrung und gründlicher Sachkenntniss, es vortrefflich verstanden, bei der Unmasse vorhandenen Materiales, von dem manches veraltet und vieles neu hinzugekommen ist, alles Wesentliche, für die Praxis Zweckdienliche und Erforderliche mit rechter Sichtung in bündiger und klarer Weise darzustellen. Das ist für ein derartiges den Berufsklassen verschiedener Länder und mit ungleicher Sachkenntniss und Anforderungen dienendes encyclopä-

disches Werk eine wesentliche Prämisse für Erfolg und Bestand. Von besonders praktischem Werthe sind dabei, unter anderen, die grosse Menge der bei verschiedenen Gegenständen angeführten Magistralformeln für allgemein oder in diesem oder jenem grösseren Kulturlande gangbaren Mittel und Specialitäten. Damit wird dem Arzte, Apotheker und Drogisten überall die Möglichkeit dargeboten, deren Zusammensetzung und Bestandtheile schnell aufzufinden und vorkommenden Falles fremdländische Recepte oder Specialitäten anfertigen zu können. In dieser Richtung dürfte der grössere Nutzen des Handbuches auf Seite der europäischen Agotheker und Drogisten liegen, da die überseeischen mit den europäischen Pharmacopäen und Formularienbüchern meistens genügend versehen sind. Aus dem Grunde wäre es zweckdienlich und ohne das Erforderniss erheblichen Volumvermehrung, besonders amerikanischen allgemein gültigen Magistralformeln grössere Berücksichtigung zu geben, weil der Zug fremder Erholungsreisender nach dem europäischen Continente ein grosser und stetig zunehmender ist.

Die Neuausgabe des Handbuches wird die bisherige Werthschätzung und Geltung als ein „Standard guide" für die Praxis des Apothekers und Drogisten im Weltmarkte unvermindert fortbehalten und in seiner neuen den modernen Anforderungen angepassten und entsprechenden Bearbeitung überall Einführung, Verbreitung und Verwerthung finden.

Von den sehr wenigen, an sich unwesentlichen, indessen die Kritik im Auslande herausfordernden Angaben, mag es im Interesse der weiteren Bearbeitung zweckdienlich sein, auf ein oder zwei aufmerksam zu machen.

Bei den Cocablätterpräparaten ist auf S. 870 beiläufig auf die Bereitung von Fluidextract mittelst Essigsäure hingewiesen. Die Verwendung der Essigsäure als Menstruum für die Erschöpfung von Gewürzen und Arzneidrogen wird voraussichtlich bei der Besprechung der Fluidextracte als am rechten Orte gebührende Berücksichtigung finden. Dieselbe ist für die Bereitung von *Acetum bulbi scittae*, *Acetum colchici*, *Acetum digitalis*, *Acetum aromaticum* etc. schon längst gebraucht worden. Für die Erschöpfung von Arzneidrogen wurde verdünnte Essigsäure im Jahre 1857 von Wm. Proctor Jr. in Philadelphia für *Secale cornutum* und seitdem von Dr. Edw. R. Squibb in Brooklyn, N. Y. zuerst besonders für die Darstellung von Gewürzessencen und dann auch für wichtige Arzneidrogen mit gutem

Erfolge verwendet und eingeführt. Die anstatt mit Alcohol mittelst mehr oder weniger verdünnte Essigsäure dargestellten Extracte wurden neuerdings als "Acetracte" bezeichnet.

Während die solide Literatur bei den neueren synthetisch dargestellten Producten jede persönliche oder geschäftliche Reclame, oder selbst den Anschein einer solchen mit wohlangebrachter Reserve vermied, ist in dem Artikel "Bergamottöl" auf Seite 856 und 857 bei der Angabe von Formeln für aromatische Sirupe und Essencen durch Bezeichnung besimmter Fabrikprodukte von dieser Maxime Abstand genommen worden. Es ist das ein bedenkliches Präcedenz, denn Angesichts der grossen Anzahl analogen synthetischen Producte und pharmaceutischer Präparate lässt sich bei Einführung einer derartigen willkürlichen Specificirung eine Grenze nicht wohl ziehen. Bei einer Ausdehnung derartiger Bevorzugung dieses oder jenes Productes oder Fabrikanten würde für die modernen Aromatica, Antipyratica und für andere Producte und Präparate individuellen Interessen und Neigungen freier Spielraum eröffnet werden. Die Consequencen sind unschwer zu ziehen und würden nicht nur Producte und Producenten, sondern auch die betreffende Fachliteraten in den Wirbel der modernen geschäftlichen Reclame hineinführen.

Die Ausstattung des Werkes ist eine solide und gereicht dasselbe wie inhaltlich so auch in dieser Beziehung den Herausgebern und dem Verleger, sowie der deutschen Fachliteratur zur Ehre. *Fr. H.*

INDICATORS AND TEST-PAPERS. Their source, preparation, application and tests for sensitiveness. Designed for the use of chemists, pharmacists and students by Alfred I. Cohn, Ph. G. 12 mo. IX+249 pages. New York 1899. John Wiley & Sons.

The author has given us here a resumé of the current facts regarding the action and application of the indicators and test-papers which have been proposed from time to time, and are in present use in chemical manipulations. Whereas a great deal has appeared on indicators in the various journals for many years, a systematic collection and arrangement seems never to have been attempted. The information regarding indicators is in fact so scattered that outside of the few prominent indicators used in every laboratory, they have been totally unavailable to the student and often even to one engaged in more advanced work. The work before

us supplies the long felt want for a systematic collection of these indicators, and in it the student as well as the more advanced worker can readily find the information desired. It is to be regretted that the author has not given references to the original articles, as an advanced worker may often have occasion to consult these for more detailed information than it is possible to give in the present volume.

Part I. of the book consists of some general considerations as to choice and application of indicators, action of indicators in other than aqueous liquids, and of a clear exposition of the theory of the action of indicators as put forward by Ostwald on the basis of the dissociation theory. The chapter on the action of indicators in other than aqueous liquids could have been more satisfactorily rendered if the author had first given Ostwald's theory and then explained the action of alcohol and other organic solvents on the indicators in the light of this theory. Part II. consists of 153 pages of indicators. For each indicator is given its synonyms, source, preparation, properties and application. Part III. treats of test papers, 45 pages, and part IV. is a collection of useful tables and a summary concerning the sensitiveness aud applicability of the different indicators. *Oswald Schreiner.*

OVER 1000 PRESCRIPTIONS of or favorite formulae of various authors, teachers and practising physicians. The whole being carefully indexed and including most of the newer remedies. 2d edition, revised and enlarged. One vol., pp. 222. Illustrated Medical Co. Detroit, 1899.

The book contains a miscellaneous collection of bare formulae, said to be the favorites of physicians, many of whose names are appended; and, no doubt, some of them have been found useful by their respective authors, but in our opinion, such of the matter as could be adopted and applied with profit is already in the possession of all progressive physicians, in a somewhat classified and more useful form.

One noticeable thing is in the use of loose indefinite clinical terms, and prescriptions for what are ordinarily regarded as mere symptoms of disease. Truly, symptoms have to be treated, but we think these would be better left out entirely or replaced by something to combat definite disease processes. To illustrate, we copy a few of the headings found over formulae. "Back Ache," "Urinary Trouble," "Chronic

Heart, Liver and Kidney Troubles." To one familiar with the pathology of disease, a prescription for such findings would be the last thing thought of. "Enlarged Spleen" is another heading; and we infer that the author would recommend the same treatment, whether the enlargement were due to an acute fever, malaria, leukaemia, cirrhosis, heart disease or some other cause.

The growing demand is not for a long list of complex empirical formulae, but rather for a small number of well selected pharmacologically tested drugs, which will give definite results when prescribed as simples, and which may be compounded only when necessary to meet the requirements of individual cases. *S. R. Boyce.*

PHARMACEUTISCHER KALENDER. 1900. Mit Notizkalender zum täglichen Gebrauch für die pharmaceutische Praxis. Herausgegeben von B. Fischer und G. Arends. Zwei Theile. Berlin. Verlag von Julius Springer. 1900. $1.00.

Der 29. Jahrgang des Pharmaceutischen Kalenders zeichnet sich durch die bekannte Reichhaltigkeit aus. Der erste Theil hat inhaltlich eine Erweiterung um 17 Seiten erfahren. Der zweite Theil, das pharmaceutische Jahrbuch, enthält als einleitenden Artikel eine interessante geschichtliche Abhandlung über "Die Entwickelung des Beleuchtungswesens im 19. Jahrhundert" von Dr. Bernhard Fischer. Die Ausstattung des Kalenders ist die gewohnte solide und wird sich derselbe für die pharmaceutische Praxis nach wie vor von Werth und Nutzen erweisen. *Fr. H.*

HIGINBOTHAMIA. A new genus, and other new Dioscoreaceæ and new Amaranthaceæ. By E. B. Uline, Ph. D. Chicago, Ill., U. S. A. Aug. 1899.

Such is the title of number 5 of volume I. of the botanical series of the Field Columbian Museum publications, and it constitutes No. I. of "Studies in the Herbarium." It contains a description of the new genus (*Higinbothamia*) of the natural order *Dioscoreaceæ* with a single species *H. synandra*; two new species of *Dioscorea*, *D. Matagalpensis* and *D. Yucatanensis;* and five new species belonging to the genera *Alternanthera* and *Iresine* of the natural order *Amaranthaceaæ*, *A. Morongii*, *A. Asterotricha*, *A. Culebrasensis*, *A. Lorentzii*, and *I. Hartmanii*. All from Mexico, Central America and South America. The work is from the hands of Dr. Edwin B. Uline.

The principal character upon which the new genus is based is the presence of three or four ovules in each cell of the ovary, one or two being the number found in each cell in all known species of *Discorea*, the nearest related genus. Dr. Uline considers the genus as a tentative one. *L. S. Cheney.*

MEYER'S CONVERSATIONS-LEXICON. Ein Nachschlagewerk des allgemeinen Wissens. Fünfte gänzlich neubearbeitete Auflage. 19. Band. Jahres-Supplement 1898—1899. Bibliographisches Institut, Wien und Leipzig. 1899. 1048 Seiten.

Bei der Vollendung dieses grossen Werkes in 18 Gr. Octav Bänden hat sich die Verlagsbuchhandlung vorbehalten, dasselbe jährlich durch einen Supplementband fortzuführen, um das Lexicon damit von Jahr zu Jahr auf der Höhe der Zeit zu erhalten und vor dem Veralten zu bewahren. Diesen Zweck erfüllt der vorliegende textlich wie illustrativ gleich reichhaltige und schön hergestellte Band in vollem Umfange. Die Artikel, welche seit ihrer Herstellung im Hauptwerke einer Ergänzung oder Fortführung bis zur Gegenwart bedürfen, haben in diesem Bande eine solche erfahren, darunter auch die Biographien und Necrologe.

Unter der grossen Anzahl interessanter naturwissenschaftlicher Artikel, welche den betreffenden Gegenstand bis zur Gegenwart fortführen, zählen z. B.: Bacterien, Blumenpflege, Electrische Eisenbahnen, Electro-chemie, Physikalische Chemie, Fiebermittel, Malaria, Microchemische Reactionen und Analyse, Milch, Nährapparate, Protozoven als Krankheitserreger, Pflanzensysteme, Spectralanalyse. Zu nationalökonomischen und allgemein interessanten Artikeln gehören unter anderen: Alcoholfrage, Arbeiterstatistik, Gewerbliche Betriebsstatistik, Geographische Literatur, Chile, China, Cuba, Architectur der Gegenwart, Landwirthschaftliche Betriebsstatistik, etc.

Dieses der allgemein anerkannten Vorzüglichkeit des Meyer'schen Conversations-Lexicons durchaus entsprechende Jahres-Supplement wird überall die gebührende Werthschätzung und willkommene Aufnahme finden. *Fr. H.*

SUPPLEMENT.

Scientific Institutions.

National Academy of Sciences.— The autumn meeting of the National Academy of Sciences was held at Columbia University, beginning Nov. 14. President, Prof. W. Gibbs was in the chair. President Seth Low of Columbia welcomed the society upon its second visit to the University. The two awards of the Banard medal for the scientific research during the past five years, the results of which have proven the most valuable to the human race, have been made at Columbia University.

Among the numerous worthy papers the one of perhaps the most general interest was presented by Dr. George F. Baker, who had seen Prof. Dewar's experiments with liquid hydrogen. He gave a very interesting account of the work and repeated a few of the experiments.

Other papers presented and read were: "The Physics of the Earth's Atmosphere," by Dr. R. S. Woodward of Columbia; "Observations on Color Vision," by Prof. O. N. Rood of Columbia; "Memoir of the late William A. Rogers," by Prof. E. W. Morley; "Report of the Conference at Wiesbaden for the Purpose of Organizing an International Union of Scientific Societies," by Prof. H. P. Bouditch; "The Map Coloring Problem," by Prof. C. S. Pierce; "The Electro-Chemical Equivalents of Copper and Silver," by Prof. T. W. Richards. Several other papers were read. The next meeting will be held at Washington, in April 1900. The report to congress and next award of the Banard medal will then be made. Lord Rayleigh received the previous award for the discovery of argon.

PROCEEDINGS RECEIVED:—

Alabama, Proceedings of the eighteenth annual meeting of the Alabama Pharmaceutical Association, held at Birmingham, Alabama, May 9 and 10, 1899. pp. 80.

Maine, Proceedings of the Maine Pharmaceutical Association, thirty-second annual meeting held at Portland July 6 & 7, 1899. pp. 103.

Maryland, Seventeenth annual proceedings of the Maryland "Pharmaceutical Association," held at Ocean City, July 11—15, 1899. pp. 175.

Missouri, Proceedings of the twenty-first annual meeting of the Missouri Pharmaceutical Associatiou, held at Jefferson City, June 6—9, 1899. pp. 90.

New Jersey, Proceedings of the twenty-ninth annual meeting of the New Jersey Pharmaceutical Association, held at Atlantic City, May 24 and 25, 1899. pp. 152.

South Carolina, Proceedings of the twenty-third annual meeting of the Pharmaceutical Association of the state of South Carolina, held at Charleston, May 11 and 12, 1899. pp. 24.

Tennessee, Proceedings of the Tennessee State Druggists' Association at its fourteenth annual meeting, held at Jackson, July 19 and 20, 1899. pp. 72.

Texas, Proceedings of the Texas State Pharmaceutical Association, held at Waco, May 16—18, 1899. pp. 68.

Wisconsin, Proceedings of the Wisconsin Pharmaceutical Association, nineteenth annual meeting, held at Janesville, August, 7—9, 1899. pp. 96.

Bibliography.

Physicians' Manual of the Products of the Laboratories of Parke, Davis & Co., including a complete price list. 1899. pp. 384.

A neat and handy manual for ready reference by the physician as to pharmaceutical and biological products of the above firm. The property and dose (apothecaries' and metric systems), list of drugs from which Parke, Davis & Co. prepare either a solid, fluid or powdered extract, and of their biological products occupy the first 75 pages. The remainder of the manual is essentially a price list, with brief explanatory data. Several illustrations of containers and special apparatus are given. A brief list of synonyms, adopted by the above firm for commercial purposes, and abbreviations of author's names completes the manual.

Warners's Pocket Medical Dictionary of To-day. pp. 413.

A manual containing information as to pronunciation and definition of 10,000 essential words and terms used in medicine and allied sciences. The more common and generally known terms have been intentionally omitted. An improvement in the spelling of medical terms is the elimination of diphthongs, excepting in plurals. Tables of arteries, muscles, nerves, bacteria and dosage of drugs are quite extensive with particular information under each. All are arranged alphabetically. The last 50 pages are devoted to specialties manufactured by W. R. Warner & Co. The manual is from the press of W. R. Warner & Co. and may be had upon the receipt of 75 cents.

CATALOGUES RECEIVED:—

J. B. Baillière et Fils—Pars. Le Mois Medico-Chirurgical. July—August, 1899.

Martin Boas—Berlin. Verzeichniss. Auswahl neuerer Bücher der Medicinischen Leihbibliothek. 3. Ausgabe, 1899—1900.

F. A. Brockhaus—Leipzig. Monthly list of new books. June, July, August and September, 1899.

Lemcke & Buechner—New York. Monthly bulletin of world literature. No. 6, 1899.

A. S. Clark—New York. Catalogue of books and pamphlets. No. 48. 1899.

Oxford University Press—New York. A select list of books. August, 1899.

The Macmillan Company—New York. Book Reviews. September, October and November, 1899.

B. G. Teubner—Leipzig. Mitteilungen. 32. Jahrgang, No. 4.

U. S. Dept. of Agr.—Washington. Monthly list of publications. July, August and September, 1899.

H. Welter—Paris. Catalogue Méthodique des Thèses de Médecine. 1899.

Commercial.

At the recent International Congress, Mr. Duell, U. S. Patent Commissioner, delivered an address on trademarks from which the following paragraphs are extracted. There exists so much ambiquity as to what may constitute a proper trademark that the following "dont's" may be of general service.

Don't adopt your own name as a sole mark for your manufactures. Every man undeniably has a right to use his own name upon his own goods to indicate their origin and ownership and as a guarantee of their quality and character. The right is common to all men, and, therefore, if there are twenty men by the name of John Adams, each one of the twenty has as good a right as any of the others. True, he cannot use his name in an unlawful manner, and from such use he will be enjoined, but a mark which consists merely of the name of the party using it is a very weak reed upon which to rely.

Don't adopt a geographical term. The Supreme Court of the United States has repeatedly held that no one can exclusively appropriate to his own benefit a geographical term so as to prevent others inhabiting the same or similar territory from dealing in similar articles. It is true that the decisions of the courts have not been uniform on this subject, but in every case, with possibly one or two exceptions, where the exclusive right to use a geographical term has been sustained, some peculiar facts have led to the decision. If you wish to keep out of litigation, don't select a geographical term for your trade mark.

Don't adopt a descriptive word or name. It has been held by the courts times without number that words or names simply indicating the quality or ingredients of the articles cannot be appropriated so as to prevent others from employing the same words upon the same articles.

Don't adopt a word expressing quality, grade or peculiar excellence. No man has the exclusive right to use any word or symbol which merely indicates the excellence of his article. No more has he the right to exclusively appropriate for his products marks, letters, numbers, or words which actually indicate the grade of the article. While I cannot say don't adopt a suggestive word (for such a word will generally be sustained by the courts), the greatest care should be used or you will enrich some member of my profession.

It is so easy to select a device or symbol or to coin a word that there is no reason why a manufacturer or merchant should select as his mark anything which is not a lawful trade mark or which is on the border line, and will in all probability ultimately land him in the courts.

On the Production of Eucalyptus Oil. — Schimmel & Co. in their last report state that the demand for varieties of eucalyptus oil containing cineol continues, and appears to be in excess of the production, for several chief sources of this oil have lately produced nothing. If this state of things should persist, it is quite possible that the position may again become as it was in 1893. Their last import of about 6000 lbs. of Bosisto's oil from Victoria

showed, in addition to a normal percentage of cineol, a certain proportion of phellandrene, which as a rule does occur in oils of a high cineol content. Without knowing what material was used in the distillation of this oil, it is impossible to say whether it has been prepared from a variety of leaf which (contrary to our present experience) contains some phellandrene in addition to a high cineol content, or whether it is impossible, in the process of distillation, to keep the leaves of the various kinds strictly separate, and varieties of leaf containing phellandrene happen to get mixed with others. Their own inclination is towards the latter view.

The distillation of eucalyptus oil on a large scale has recently been commenced at Moss Vale, N. S. W., but unfortunately the leaves distilled there belong to the variety known as *Eucalyptus amygdalina*, which contains enormous proportions of phellandrene, but an insufficient percentage of cineol. In the present state of the market, such a variety is practically unsaleable. The mistake which has been made is all the more regretable, because, according to statements made by the owner of the distillery, no varieties of eucalyptus rich in cineol occur at all in the neighborhood of the factory.

In Algeria there has, for many months, been a scarcity of oil. Our informant tells us that this scarcity has its cause in the fact that it is now necessary to go too far into the interior of the country to find trees suitable for distillation. It is, therefore, no longer possible to distil the leaves in the towns themselves, where the stationery distilling-plants are situated, and portable stills have had to be started, the owners of which are only willing to work them, if they can sell large quantities of oil in advance at a fair price.

The eucalyptus plantations in Portugal, of which we have already given some particulars before, have since continued to develop. They have a special interest, because the chief object of the proprietor is to cultivate a pure globulus variety. The oil which is produced there consequently always shows an even, normal content of eucalyptol (cineol). According to information given us by the proprietor of the plantation his output of eucalyptus oil in 1898 amounted to about 12 tons, for which he always found a rapid sale. He stated that the leaves of the young trees yield a considerably smaller proportion of oil than the narrow leaves of the older trees. His information also confirms that there is no longer any question of overproduction in eucalyptus oil, and that more likely we shall experience a scarcity of it.

CATALOGUES RECEIVED:—

Semi-annual Report of Schimmel & Co. (Fritzsche Brothers), Leipzig and New York, containing introductory remarks; report on essential oils, commercial and scientific; notes on recent work in terpenes and essential oils; and additional notes on aromatic chemicals. Pamphlet, pp. 75.

Wilh. Spoerhase (vormals C. Staudinger & Co.)—Giessen. Präcis ons-Waagen und Gewichte.

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